

FLIGHT DATA FILE

Flight Plan

STS-78

(FRR Trajectory)

**Mission Operations Directorate
Operations Division**

**Final
May 15, 1996**

<u>EVENT</u>	<u>CDT</u>		
Launch	09:49	Thurs	June 20
KSC Landing	08:09	Sat	July 6

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 R. H. NOTE
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National Aeronautics and
 Space Administration

Lyndon B. Johnson Space Center
 Houston, Texas

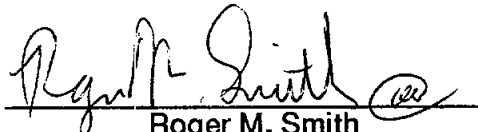


MISSION OPERATIONS DIRECTORATE


STS-78 FLIGHT PLAN


FINAL
May 15, 1996


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FLIGHT PLAN
STS-78

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FINAL 05/15/96

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3-2	78/FIN	3-50	78/FIN
3-3	78/FIN	3-51	78/FIN
3-4	78/FIN	3-52	78/FIN
3-5	78/FIN	3-53	78/FIN
3-6	78/FIN	3-54	78/FIN

* - Omit from flight book

3-55	78/FIN
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5-i	* 78/FIN
5-ii	* 78/FIN
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6-2	* 78/FIN
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* - Omit from flight book

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INTRODUCTION

The STS-78 Flight Plan is the Flight Data File article that contains the on-orbit timeline. It does not contain the detailed timelines that are covered in the Ascent, Post Insertion, Deorbit Prep, and Entry Checklists. For continuity, the summary level timeline includes the entire flight.

This on-orbit timeline satisfies the objectives specified in the Flight Definition and Requirements Directive, and the requirements of the STS-78 Flight Requirements Document. The Flight Plan, as part of the Flight Data File, meets the specifications of One Cycle to Flight version of the STS-78 Flight Initialization Data Pack.

The one cycle to fly profile used for this Flight Plan is for a launch date of June 20, 1996, at 09:49 CDT. Orbiter inertial attitudes are expressed relative to a mean of 1950 (M50) reference frame.

JSC-22359, Crew Scheduling Constraints (Appendix K, CPMP), Basic, Rev B, January 1992, has been used to build the timelines contained in this Flight Plan. The following two Appendix K Exemptions have been approved for STS-78:

- #76C - Allows the use of the payload crew's pre/post sleep on a daily basis for specified payload activities, provided this time used is given back to the crew during the day.
- #77A - Allows for UMS and AEM activities for the crew on entry day.

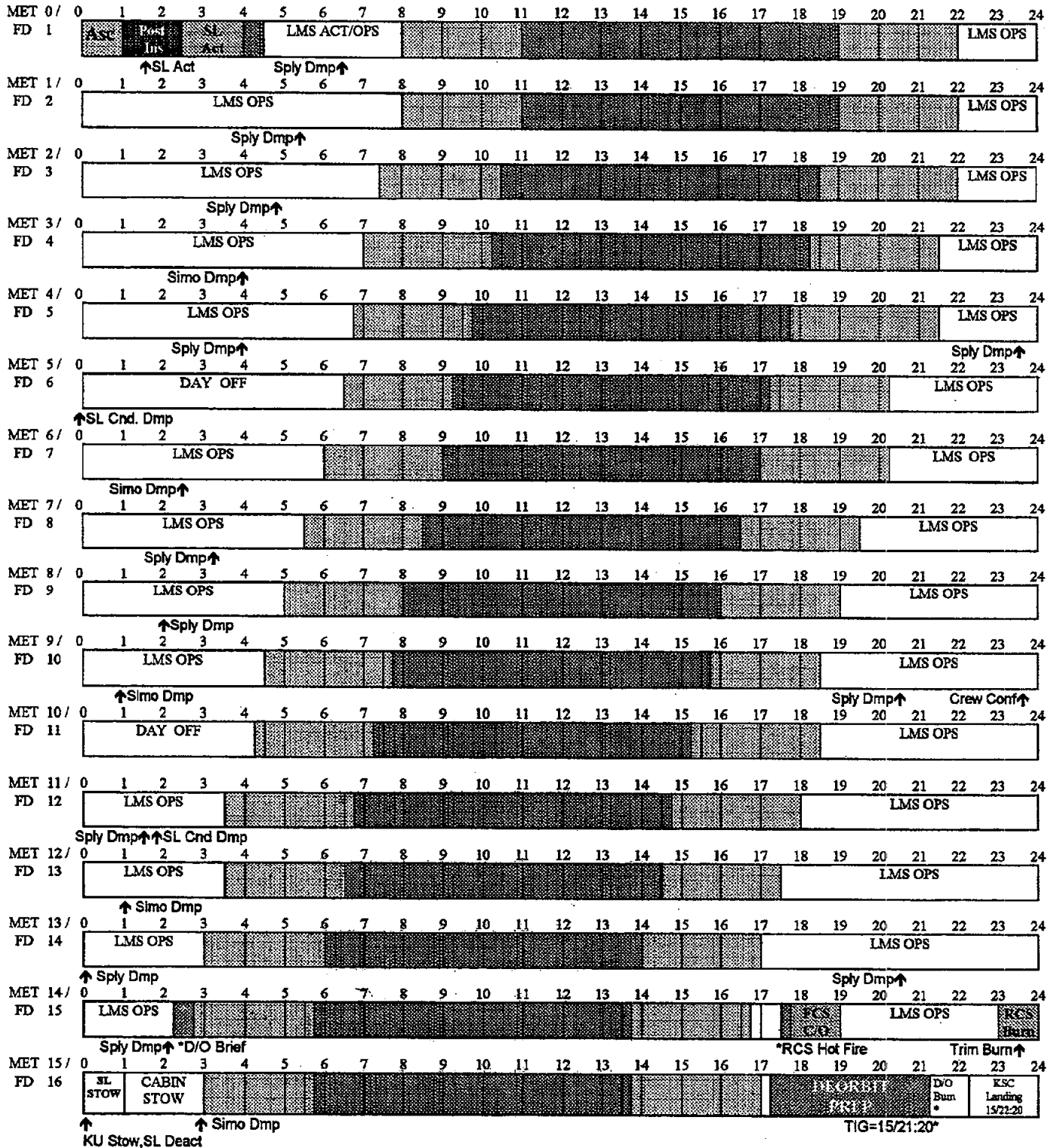
The timeline formats used in this Flight Plan are based on JSC-19933, Timeline Format Definitions and Standard Notes, Rev C, May 1990.

STS-78 OVERVIEW

STS-78
OVERVIEW TIMELINE
FINAL

6/20/96 Launch
14:49 GMT Launch

Trim Burn
↓



SUMMARY TIMELINE

SUMMARY TIMELINE

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
172:14:49/ 173:02:49	000:00:00/ 000:12:00	172:09:49/ 172:21:49	/172 CDT	-15.0		JUNE 20, 1996	STS-78	FINAL	5/15/96				
CDT :172													
MET :000													
	0	1	2	3	4	5	6	7	8	9	10	11	12
CDR HENRICKS		POST INS P L B D M N V R	POST INS	I M U M N V R	RCS BURN - X L V	MEAL	A E M I O B S V	SEE S I P N L I T D M P	ST P E W R Y N D O M N	M P R I O U R I N G	PRE SLEEP	PRE SLEEP	SLEEP
PLT KREGEL		POST INS	S/L ACT	I N G R E S S	S/L ACT	P/L ACT	MEAL	S T I L O P S	K C A A C T	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP
MS1 LINNEHAN		POST INS	S/L ACT	I N G R E S S	S/L ACT	MEAL	MEAL	T V D I P R E P	T V D 7 A R M	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP
MS2 HELMS		POST INS P L B D O P S	POST INS T V - T R E	I N G R E S S K D U P L B Y	RCS BURN	MEAL	MEAL	A G S E S A 2 B	SS L A M A P I L R E	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP
MS3 BRADY		POST INS	NFAST190	NFAST190	TREIDON	MEAL	TVD7ARM	TVD1PREP	TVD7ARM	PRE SLEEP	PRE-MS3	PRE SLEEP	SLEEP
PS1 FAVIER		POST INS	TREIDON	M D K - P R E P N F A S T 1 9 0 M O D - P R E P	TREIDON	TVD7ARM	AGH1ACT	MEAL	A G S E S A 2 B	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP
PS2 THIRSK		POST INS	TREIDON	NFAST190	TVD4SET	MEAL	TVD7ARM	TVD1PREP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP
DAY/NIGHT													
ORBIT													
TDRS													
DBND/INHBT													
ATT													
NOTES:													


DIRECT LAUNCH INSERTION

OMS-2

ASC + BIAS -XLV,+ZVV+IMU
 @BIAS -XLV,+ZVV @BIAS -XLV,+ZVV ■ APU HTR DEACT ▽ PRE SLEEP
 o LAMP/SMOKE ■ APU HTR RECONFIG

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE									
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CDT :172	22	23	0	CDT:173	1	2	3	4	5	6	7	8	9	0	MET:001			
MET :000	12	13	14	15	16	17	18	19	20	21	22	23						
CDR HENRICKS	SLEEP								DSO 493	POST SLEEP	KC C A F I L E	POST SLEEP	BD P I S E T	CO I S I O G	AG A R U S 7	T V D I P R E P	AL F I P R E P	STATUS
PLT KREGEL	SLEEP								DSO 493	POST SLEEP			PA W S I S E T	PA W S 2 O P S	AG A R U S 7	D T O	CO I S O P E R	
MS1 LINNEHAN	SLEEP								POST-MS1	POST SLEEP			T V D I P R E P	TV D B R L E G				
MS2 HELMS	SLEEP								POST-MS2	POST SLEEP			D/P	CO I S 2 S E T	CO I S 3 O P E R			
MS3 BRADY	SLEEP								POST-MS3	POST SLEEP					AG A R U S 7	T V D I P R E P	AL F I P R E P	
PS1 FAVIER	SLEEP								POST-PS1	POST SLEEP				CO I S I O G	CO I S I O G	CO I S 3 V H M		
PS2 THIRSK	SLEEP								POST-PS2	POST SLEEP			T V D 7 A R M	AL F I P R E P	POST SLEEP	PA W S 2 O P S		
DAY/NIGHT ORBIT																		
TDRS																		
DBND/INHB ATT	BIAS -XLV,+ZVV																	
NOTES:																		

@DTO 623
 CABIN AIR MON
 ▲ AUTO FC PURGE

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE		
173:14:49 / 174:02:49		001:00:00 / 001:12:00		173:09:49 / 173:21:49		/173 CDT	-15.5		JUNE 21, 1996	STS-78	FINAL	5/15/96		
CDT	MET													
:173	:001	10	11	12	13	14	15	16	17	18	19	20	21	12
CDR HENRICKS	STATUSSCK	TVD8OPER	PAWS20PS	TVD8OPER	MEAL	MEAL		ALF7PFT		PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP	
PLT KREGEL	PGF1STAT	FATIG190	FATIG190	MEAL	AG4ESA7	ALF7PFT	FATIG190	TVD8OPER	FATIG190	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP	
MS1 LINNEHAN	TVD8RLEG	FATIG190	FATIG190	POST SLEEP	MEAL	COIS3VHM	COIS40KN	ALF7PFT	PRE SLEEP	PRE-MS1	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP
MS2 HELMS	FD2	COI4OPER	COI3OPER	COI4OPER	MEAL	COI3OPER	COI4OPER	POST SLEEP	PRE SLEEP	ALF4CAL	PRE-MS2	PRE SLEEP	TAG-UP	PRE SLEEP
MS3 BRADY	ALF7PFT	MEAL	TVD8RLEG	TVD8RLEG	FATIG190	FATIG190	FATIG190	PRE SLEEP	COIS3VHM	COIS40KN	PRE-MS3	TAG-UP	PRE SLEEP	SLEEP
PS1 FAVIER	COIS40KN	POST SLEEP	ALF7PFT	MEAL	PRE SLEEP		BOPIS1	TVD8RLEG	TVD8RLEG	FATIG190	FATIG190	PRE-PS1	PRE SLEEP	TAG-UP
PS2 THIRSK	PAWS20PS	COIS3VHM	COIS40KN	MEAL	PRE SLEEP	ALF7PFT	COI3OPER	COI4OPER	PRE-PS2	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP	
DAY/NIGHT	ORBIT													
		17	18	19	20	21	22	23	24					
TDRS	E													
DBND/INHB	W													
ATT		BIAS -XLV,+ZVV												
NOTES:														
														▽ PRE SLEEP

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE			
174:02:49/ 174:14:49		001:12:00/ 002:00:00		173:21:49/ 174:09:49		/173 CDT	-15.6		JUNE 21, 1996	STS-78	FINAL	5/15/96			
CDT	:173	22	23	0	1	2	3	4	5	6	7	8	9	0	MET:002
MET	:001	12	13	14	15	16	17	18	19	20	21	22	23		
CDR HENRICKS									DSO 493	POST SLEEP	X C A I E R F I L E	POST SLEEP	T V - P A W S	ERGMTR SETUP	V S E T U P
PLT KREGEL									POST PLT DSO 493	POST SLEEP			A G G E S A S A B D P 4 S T I D	P / T V 2 3 S E T U P	
MS1 LINNEHAN									POST-MS1	POST SLEEP	D/P	T V D I P R E P	C O I S S T O	T V D B R L E G	T V D B R L E G
MS2 HELMS	F D 2								POST-MS2	POST SLEEP	D/P	T V D 6 P E M S	C O I S S T O	A G G E S A S A	A G G E S A S A
MS3 BRADY									POST-MS3	POST SLEEP	M E D I C A L D I R	A L F I P R E P	T V D 8 O P E R	A L F 2 C A L	E X E R C I S E
PS1 FAVIER									POST-PS1	POST SLEEP	D/P	P A W S O P S	A L F 3 P F T	E R G I S E	A L F 3 P F T
PS2 THIRSK									POST-PS2	POST SLEEP	D/P	T V D I P R E P	T V D B R L E G		T V D B R L E G
DAY/NIGHT															
ORBIT		25	26	27	28	29	30	31	32						
TDRS	E W														
DBND/INH															
ATT															
NOTES:															

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE									
174:14:49 / 175:02:49	002:00:00 / 002:12:00	174:09:49 / 174:21:49	/174 CDT	-15.5		JUNE 22, 1996	STS-78	FINAL	5/15/96									
CDT :174																		
MET :002																		
	10	11	12	13	14	15	16	17	18	19	20	21	12					
CDR HENRICKS	VCS SETUP	VCS OPS	SAREX SETUP	SAREX	MEAL	CCD RH EON WILCKE	FILTER CLEANING	STP	EXERCISE	STP	DTG 1126 VIDEO	ACFT	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	
PLT KREGEL	PGF4BEND	STATUSCK	EXERCISE	MEAL	UMS13CAL	VCS OPS	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	EXERCISE	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	
MS1 LINNEHAN	TVD90PER	FATIG190	FATIG190	TVD9LLEG	MEAL	PRE SLEEP	EXERCISE	POST SLEEP	EXERCISE	POST SLEEP	PRE-MS1	PRE-MS1	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	
MS2 HELMS	FD3 PGF4BEND	PGF4BEND	POST SLEEP	MEAL	MEAL	TVD90PER	EXERCISE	EXERCISE	EXERCISE	EXERCISE	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	
MS3 BRADY	EXERCISE	PRE SLEEP	MEAL	POST SLEEP	POST SLEEP	TVD9LLEG	EXERCISE	EXERCISE	EXERCISE	EXERCISE	PRE-MS3	PRE-MS3	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	
PS1 FAVIER	ALF3PFT	ERG20PS	ALF3PFT	MEAL	PRE SLEEP	POST SLEEP	EXERCISE	EXERCISE	EXERCISE	EXERCISE	PRE-PS1	PRE-PS1	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	
PS2 THIRSK	TVD9LLEG	FATIG190	FATIG190	PRE SLEEP	POST SLEEP	MEAL	ALF3PFT	ERG20PS	ALF3PFT	ERG20PS	POST SLEEP	PRE-PS2	PRE-PS2	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	
DAY/NIGHT																		
ORBIT	33	34	35	36	37	38	39	40										
TDRS	E	W																
DBND/INH																		
ATT																		
NOTES:	◎DTG 675 VOICE CNTRL OF CCTV		◎VOICE CK		◎DTG 675 VOICE CNTRL OF CCTV													

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE					
175:02:49 / 175:14:49	002:12:00 / 003:00:00	174:21:49 / 175:09:49	/174 CDT	-15.2		JUNE 22, 1996	STS-78	FINAL	5/15/96					
CDT :174	22	23	0	1	2	3	4	5	6	7	8	9	0	MET:003
MET :002	12	13	14	15	16	17	18	19	20	21	22	23	0	
CDR HENRICKS	SLEEP			POST SLEEP			DSO 493	KKA FILE XFILE POST SLEEP DTO 623		PANSOOPS				
PLT KREGEL	SLEEP			POST SLEEP			DSO 493	POST-PLT	TV-PAWS	BDP8VVV	POST-PLT	PANSOOPS	SETUP	
MS1 LINNEHAN	SLEEP			POST SLEEP			POST-MS1	D/PALFIPREP	TVD9OPER	ALICAL	TVDJPREP	TVDJPREP	PANCOOP	
MS2 HELMS	SLEEP			POST SLEEP			POST-MS2	D/PPOST SLEEP	EXERCISE					
MS3 BRADY	SLEEP			POST SLEEP			POST-MS3	PRE SLEEP	ALF3PFT					
PS1 FAVIER	SLEEP			POST SLEEP			POST-PS1	D/P	TVD1PREP	TVD9LLEG		TVD9LLEG	TVD9LLEG	
PS2 THIRSK	SLEEP			POST SLEEP			POST-PS2	D/P	TVD1PREP	PANSOOPS	POST SLEEP			
DAY/NIGHT ORBIT														
TDRS														
DBND/INHB ATT	3 DEG/H2O-INHB 3 DEG BIAS -XLV,+ZVV													
NOTES:													@DTO 623 CABIN AIR MON	

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
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CDT :175															
MET :003															
CDR HENRICKS	PAOEVENT CCDRHW EONWIL CKE	EXERCISE	MEAL	SINMI OTDMP	STLE MR OM DMP	STLE MR OM DMP	PRE SLEEP	TAG-UP KCAF FILE	PRE SLEEP	SLEEP					
PLT KREGEL	PAOEVENT	EXERCISE	MEAL	AG5N ASA2 TVD1 PREP	POST SLEEP	SLEA S	DTO 1126 WHT BRD	PRE SLEEP PRE-PLT	TAG-UP	PRE SLEEP	SLEEP				
MS1 LINNEHAN	PAOEVENT SACNO OPS	POST SLEEP	MEAL	ALF3PFT	ERG20PS	ALF3PFT	ERG20PS	CLEAN UP SACNO OPS	PRE SLEEP	PRE-MS1	TAG-UP	PRE SLEEP	SLEEP		
MS2 HELMS	FD4 PAOEVENT TV-TVD	P-ERGO	TVD9 OPER	TVD3 LEGS	PMS6 OP	MEAL	BDV9 LEGR	SACX S	ALF4 CAL SACNO OPS	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP		
MS3 BRADY	ERG20PS	ALF3PFT	ERG20PS	CLEAN UP SACNO OPS	MEAL	TVD1 PREP	TVD7ARM	TVD1 PREP	TVD7ARM	SACNO OPS PRE SLEA S	PRE-MS3	TAG-UP	PRE SLEEP	SLEEP	
PS1 FAVIER	PASNO OPS	POST SLEEP	SACNO OPS	MEAL	TVD1 HGDB	AG5N ASA2	AG5N ASA2	AG5N ASA2	EXERCISE	PRE SLEEP	BDV9 LEGR SACNO OPS	PRE-PS1	TAG-UP	PRE SLEEP	SLEEP
PS2 THIRSK	TVD1 PREP	TVD9LLEG	TVD9LLEG	SACNO OPS	TVD1 HGDB	MEAL	PRE SLEEP	TVD1 PREP	EXERCISE	SACNO OPS	PRE-PS2	TAG-UP	PRE SLEEP	SLEEP	
DAY/NIGHT ORBIT	49	50	51	52	53	54	55	56							
TDRS	E	W													
DBND/INHB															
ATT															
NOTES:	FREE BIAS -XLV,+ZVV @EISENHOWER MIDDLE, SAN ANTONIO, TX														

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
176:02:49/ 176:14:49	003:12:00/ 004:00:00	175:21:49/ 176:09:49	/175 CDT	-14.2		JUNE 23, 1996	STS-78	FINAL	5/15/96						
CDT :175	22	23	0	1	2	3	4	5	6	7	8	9	0	MET:004	
MET :003	12	13	14	15	16	17	18	19	20	21	22	23	0		
CDR HENRICKS	SLEEP						DSO 493	POST SLEEP	AG9ESAB	TV-COIS	EXERCISE				
PLT KREGEL	SLEEP						DSO 493	POST SLEEP	KCA FILE	XFER	STATUSSK	AG9ESAB	PAG9ESAB	BDP9ESAB	
MS1 LINNEHAN	SLEEP						POST-ES1	POST SLEEP	D/P	TVDIPREP	TVD7ARM				
MS2 HELMS	SLEEP						FD 5	POST SLEEP	D/P	COIS2SET	COI3OPER	COI4OPER	COIS5SET	COI6SET	
MS3 BRADY	SLEEP						POST-MS3	POST SLEEP	D/P	POST SLEEP	PSLEEP	SAREX	COIS7SET	COI8SET	
PS1 FAVIER	SLEEP						POST-PS1	POST SLEEP	D/P	POST SLEEP	EXERCISE		COIS9SET	COI10SET	
PS2 THIRSK	SLEEP						POST-PS2	POST SLEEP	D/P	TVDIPREP	COIS11SET	COIS12VHM	COIS13OKR	COI14SET	
DAY/NIGHT															
ORBIT	57 58 59 60 61 62 63 64														
TORS															
DBND/INHB															
ATT	BIAS -XLV,+ZVV														
NOTES:															

@MS3 PERSONAL


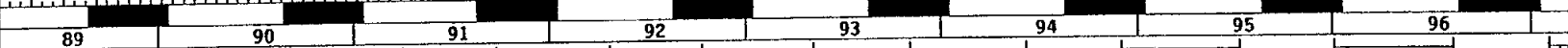
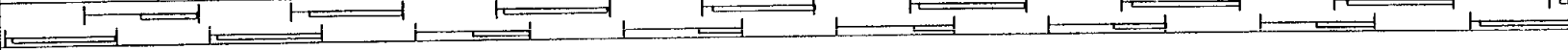
GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
176:14:49/ 177:02:49		004:00:00/ 004:12:00		176:09:49/ 176:21:49		/176 CDT	-13.5		JUNE 24, 1996	STS-78	FINAL	5/15/96				
CDT	:176	10	11	12	13	14	15	16	17	18	19	20	21	12		
MET	:004	0	1	2	3	4	5	6	7	8	9	10	11	12		
CDR HENRICKS		FILTER CLEANING	MEAL		P-SAMS	SINFLY DMP		STPLRM DMP	CCD RHO EON WIL CKE		KSCAT UP VTD	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP	
PLT KREGEL		EXERCISE	MEAL		SAREX	UMS13CAL		BOP10MON	AEM10BSV	AEM2WATR		PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP	
MS1 LINNEHAN	POST SLEEP	PS PREP	MEAL	COIS3VHM	COIS3VHM	EXERCISE	PRE SLEEP	SACNOBS	TVD10HGD		PRE-MS1	PS PREP	TAG-UP	PRE SLEEP	SLEEP	
MS2 HELMS	FD 5	COI3OPER	MEAL	COI3OPER	COI3OPER	COI3OPER	COI3OPER	COI4OPER	EXERCISE		PRE SLEEP		TAG-UP	PRE SLEEP	SLEEP	
MS3 BRADY	EXERCISE		MEAL		TVD1PREP	PRE SLEEP		COIS3VHM	COIS4OKN	TVD10HGD		PRE-MS3	TAG-UP	PRE SLEEP	SLEEP	
PS1 FAVIER	COIS3VHM	COIS4OKN	MEAL		TVD1PREP			TVD7ARM		PRE SLEEP	SACNOBS	PRE-PS1	PS PREP	TAG-UP	PRE SLEEP	SLEEP
PS2 THIRSK	TVD1PREP		TVD7ARM		SACNOBS	MEAL	POST SLEEP	PRE SLEEP	EXERCISE		SACNOBS	PRE-PS2	PS PREP	TAG-UP	PRE SLEEP	SLEEP
DAY/NIGHT ORBIT		65	66	67	68	69	70	71	72							
TDRS	E W															
DBND/INHBT ATT																
NOTES:																

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
177:02:49/ 177:14:49	004:12:00/ 005:00:00	176:21:49/ 177:09:49	/176 CDT	-12.6		JUNE 24, 1996	STS-78	FINAL	5/15/96
CDT :176									MET:005
MET :004									
CDR HENRICKS	SLEEP	POST SLEEP	POST SLEEP	EXERCISE	SAREX	BDDP14MAG	BDDP14MAG	SINLT DPA	DTO 6NS
PLT KREGEL	SLEEP	POST SLEEP	POST SLEEP	DSO 802					
MS1 LINNEHAN	SLEEP	POST-MS1	POST SLEEP	D/P POST SLEEP	EXERCISE				
MS2 HELMS	SLEEP	POST-MS2	POST SLEEP	D/P POST SLEEP	EXERCISE				
MS3 BRADY	SLEEP	POST-MS3	POST SLEEP	POST SLEEP	PRE SLEEP				
PS1 FAVIER	SLEEP	POST-PS1	POST SLEEP	D/P	DSO 802				
PS2 THIRSK	SLEEP	POST-PS2	POST SLEEP	D/P	DSO 802				
DAY/NIGHT ORBIT									
TDRS									
DBND/INH ATT									
NOTES:									

BIAS -XLV,+ZVV


©HERITAGE MIDDLE, COLLEYVILLE, TX

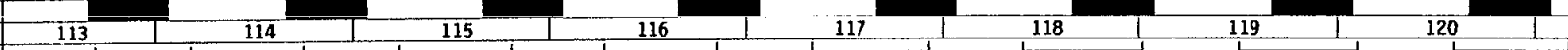
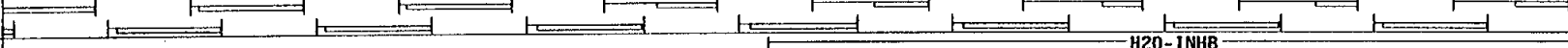
GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
177:14:49/ 178:02:49	005:00:00/ 005:12:00	177:09:49/ 177:21:49	/177 CDT	-11.6		JUNE 25, 1996	STS-78	FINAL	5/15/96				
CDT :177	10	11	12	13	14	15	16	17	18	19	20	21	12
MET :005	0	1	2	3	4	5	6	7	8	9	10	11	12
CDR HENRICKS	SL CNDS TK DUMP	MEAL	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF
PLT KREGEL	DSO 802	MEAL	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF
MS1 LINNEHAN		MEAL	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF
MS2 HELMS	FD 6	MEAL	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF
MS3 BRADY	EXERCISE	MEAL	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF
PS1 FAVIER	DSO 802 POST SLEEP	MEAL	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF
PS2 THIRSK	DSO 802 POST SLEEP	MEAL	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF	DAY-OFF
DAY/NIGHT ORBIT		81	82	83	84	85	86	87	88				
TDRS	E W												
DBND/INHBT	ATT	BIAS -XLV,+ZVV											
NOTES:													

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON 	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
178:02:49/ 178:14:49		005:12:00/ 006:00:00		177:21:49/ 178:09:49		/177 CDT	-10.5		JUNE 25, 1996	STS-78	FINAL	5/15/96						
CDT :177 22		23 0		CDT:178 1 2		3	4	5	6	7	8	9 0 MET:006						
MET :005 12		13 14		15 16		17	18	19	20	21	22	23						
CDR HENRICKS	SLEEP						DSC 493	POST SLEEP	X K C A F I L E	POST SLEEP	EXERCISE	P A W S O P S						
PLT KREGEL	SLEEP						DSC 493	POST SLEEP		P - T V D	T V - P A W S O P S	P A W S O P S	S T A T U S C K	EXERCISE				
MS1 LINNEHAN	SLEEP						P O S T - S L E E P	POST SLEEP	D/P	T V D I P R E P	TVDBRLEG	T V D B R L E G	T V D B O P E R					
MS2 HELMS	F D 6	SLEEP						F D 7	POST SLEEP	D/P	A G B N A S A 1	B D P 1 O M O N	EXERCISE	T V - T R E E				
MS3 BRADY	SLEEP						P O S T - S L E E P	POST SLEEP	D/P	T V D I P R E P	T V D I P R E P	T V - T V D	TVDBOPER	T V D B O P E R	TVDBRLEG			
PS1 FAVIER	SLEEP						P O S T - S L E E P	POST SLEEP	D/P	A G B N A S A 1	A G B N A S A 1	T R E I D O N	P S O L E T E P	P S L E E P	T R E I D O N	T V D B O P E R	P A W S O P S	E X E R C I S E
PS2 THIRSK	SLEEP						P O S T - S L E E P	POST SLEEP	D/P	P S O L E T E P	P S L E E P	P A W S O P S	T R E I D O N	T R E I D O N	T V D B O P E R	EXERCISE		
DAY/NIGHT ORBIT																		
TDRS																		
DBND/INH ATT	BIAS -XLV,+ZVV																	
NOTES:																		

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
178:14:49 / 179:02:49	006:00:00 / 006:12:00	178:09:49 / 178:21:49	/178 CDT	-9.2		JUNE 26, 1996	STS-78	FINAL	5/15/96				
CDT :178													
MET :006													
	10	11	12	13	14	15	16	17	18	19	20	21	12
CDR HENRICKS	MEAL	PIPGF	UMS13CAL	ST IN MI OT DMP	ST E MR OM DMP	ST C AT U VP D	PRE SLEEP	TAG-UP	PRE SLEEP		SLEEP		
PLT KREGEL	SAREX	MEAL	PGTISTAT	BDP16HVP	CCD RHW EON WILCKE	P/T V25	PAOEVENT	PRE SLEEP	TAG-UP	PRE SLEEP		SLEEP	
MS1 LINNEHAN	TVD88OPER	TVD88OPER	MEAL	TREEDON	TRE3DOFF		EXERCISE	PRE SLEEP	TAG-UP	PRE SLEEP		SLEEP	
MS2 HELMS	FD7	MEAL	SUNSID		TRE3DOFF	BDD3SUB	PAOEVENT	PRE SLEEP	TAG-UP	PRE SLEEP		SLEEP	
MS3 BRADY	TVD88OPER	TVD88OPER	MEAL	TREEDON	TRE3DOFF		EXERCISE	PRE SLEEP	POST SLEEP	PRE-MS3	TAG-UP	PRE SLEEP	
PS1 FAVIER	EXERCISE	MEAL	BDP16HVP		TVD1PREP		TVD8RLEG	TVD8RLEG	PRE-PS1	PRE-PS1	TAG-UP	PRE SLEEP	
PS2 THIRSK	EXERCISE	MEAL	SAREX		TVD1PREP	TVD1PREP	TVD8OPER	TVD8OPER	PRE-PS2	PRE-PS2	TAG-UP	PRE SLEEP	
DAY/NIGHT ORBIT													
TDRS	E												
DBND/INHB ATT													
NOTES:													

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
179:02:49/ 179:14:49	006:12:00/ 007:00:00	178:21:49/ 179:09:49	/178 CDT	-7.9		JUNE 26, 1996	STS-78	FINAL	5/15/96						
CDT :178	22	23	0	CDT:179	1	2	3	4	5	6	7	8	9	0	MET:007
MET :006	12	13	14	15	16	17	18	19	20	21	22	23	0		
CDR HENRICKS	SLEEP			DSO 493	POST SLEEP			KCA FILE XCTE RE POST SLEEP D TO 623	PANNOPOSS	MEAL					
PLT KREGEL	SLEEP			POST-PT DSO 493	POST SLEEP			TV-PALWS PANNOPPOSS	EXERCISE			STATUSCK	MEAL		
MS1 LINNEHAN	SLEEP			POST-ES1	POST SLEEP			D/PALFIPREP POST SLEEP	PSRIE P	EXERCISE		TV-DINER	MEAL		
MS2 HELMS	F D 7	SLEEP			F D 8	POST-MS2	POST SLEEP			D/PPOST SLEEP	P-SAMS ALESCAL P-TVD TVD8OPER P-TVD TVD8OPER	MEAL			
MS3 BRADY	SLEEP			POST-MS3	POST SLEEP			D/PPOST SLEEP	ALF3PFT	ERG2OPS		ALF3PFT			
PS1 FAVIER	SLEEP			POST-PS1	POST SLEEP			D/P BDP3SUB POST SLEEP	PSRIE P PANNOPPOSS	BDP2ASV1			HV DM Z DA OFF		
PS2 THIRSK	SLEEP			POST-PS2	POST SLEEP			D/P POST SLEEP	TV-DIPREP TVD8RLEG	TV-D8RLEG	PANNOPPOSS	MEAL			
DAY/NIGHT															
ORBIT	105 106 107 108 109 110 111 112														
TDRS															
DBND/INHB	3 DEG/H20-INHB 3 DEG														
ATT	BIAS -XLV,+ZVV														
NOTES:	<p style="text-align: right;">@D TO 623 CABIN AIR MON</p>														

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
179:14:49 / 180:02:49	007:00:00 / 007:12:00	179:09:49 / 179:21:49	/179 CDT	-6.4		JUNE 27, 1996	STS-78	FINAL	5/15/96

	CDT :179												
	MET :007												
	0	1	2	3	4	5	6	7	8	9	10	11	12
CDR HENRICKS	MEAL				CON F PRT V M ED K S C E AT U V I D	EXERCISE	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP			SLEEP
PLT KREGEL	MEAL			CCD R H W E O N W I L C K E	S I P N L I Y I T		PRE SLEEP	TAG-UP		PRE SLEEP			SLEEP
MS1 LINNEHAN	MEAL	TVDI PREP	TVD9LLEG	TVD3PEMMS	TVD9LLEG	SAREX	SETUP	PAO EVENT	PREMSS	PRE SLEEP	TAG-UP		PRE SLEEP
MS2 HELMS	MEAL	TVDI PREP		EXERCISE	TVDI PREP	ALF4CAL	TVD9OPER	TVD3PEMMS	PMS9OP	PRE SLEEP	TAG-UP		PRE SLEEP
MS3 BRADY	ALF3PFT ERG20PS CLEANUP	MEAL	PRE SLEEP		TVDI PREP	TVD9LLEG	TVD3PEMMS	TVD9LLEG	PREMSS	PRE SLEEP	TAG-UP		PRE SLEEP
PS1 FAVIER	MEAL	SAREX	TVD9OPER	TVD9OPER	TVD3PEMMS	EXERCISE		PAO EVENT	PREMSS	PRE SLEEP	TAG-UP		PRE SLEEP
PS2 THIRSK	MEAL	PS RLEETP TVDI PREP	ALF3PFT	ERG20PS	ALF3PFT	ERG20PS	CLEANUP	PAO EVENT	PREMSS	PRE SLEEP	TAG-UP		PRE SLEEP
DAY/NIGHT ORBIT													
TDRS													
DBND/INHB ATT	BIAS -XLV,+ZVV H20-INHB												
NOTES:	©CENG, GRENOBLE, FRANCE ©MS1 PERSONAL												

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE									
180:02:49 / 180:14:49	007:12:00 / 008:00:00	179:21:49 / 180:09:49	/179 CDT	-4.8		JUNE 27, 1996	STS-78	FINAL	5/15/96									
CDT :179	22	23	0	1	2	3	4	5	6	7	8	9	0	MET:008				
MET :007	12	13	14	15	16	17	18	19	20	21	22	23	0					
CDR HENRICKS	SLEEP			DSO 493	POST SLEEP	KC A F I L E	POST SLEEP	P/T V S	PAO E V E N T	FILTER C L E A N I N G	EXERCISE	MEAL						
PLT KREGEL	SLEEP			POST-PLT DSO 493	POST SLEEP		P-T V D	STAT US S C K	EXERCISE	POST S L E E P	T V - P A W S	S T I L I D	S T I L I D	A G A I N S T	MEAL			
MS1 LINNEHAN	SLEEP			POST-MS1	POST SLEEP		D/P A L F 1 P R E P	PAO E V E N T	ALF3PFT	ERG20PS	ALF3PFT	ERG20PS						
MS2 HELMS	F D 8	SLEEP			F D 9	POST-MS2	POST SLEEP	D/P	A G A I N S T	B D P 2 A S V 2	PAO E V E N T	POST SLEEP	A G A I N S T	T V D 9 O P P E R	P E R G O	T V D 3 P E M S	P E M S O O P	MEAL
MS3 BRADY	SLEEP			POST-MS3	POST SLEEP	D/P	EXERCISE	PAO E V E N T	POST SLEEP	PRE SLEEP	MEAL							
PS1 FAVIER	SLEEP			POST-PS1	POST SLEEP	D/P	T V D 1 P R E P	T V D 9 L L E G	T V D 3 P E M S	T V D 9 L L E G	P A W S O O P	POST SLEEP	MEAL					
PS2 THIRSK	SLEEP			POST-PS2	POST SLEEP	D/P	T V D 1 P R E P	S A R E X	T V D 9 O P P E R	T V D 9 O P P E R	A L F 2 C A L	T V D 3 P E M S	P E M S O O P	T V D 9 L L E G	T V D 9 L L E G	T V D 9 L L E G		
DAY/NIGHT ORBIT	121			122	123	124	125	126	127	128								
TDRS	E			W														
DBND/INH ATT	H20-INHB			BIAS -XLV,+ZVV														
NOTES:	ELTHAM LADIES COLLEGE, AUSTRALIA																	

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
180:14:49/ 181:02:49		008:00:00/ 008:12:00		180:09:49/ 180:21:49		/180 CDT	-3.1		JUNE 28, 1996	STS-78	FINAL	5/15/96						
CDT	:180	10	11	12	13	14	15	16	17	18	19	20	21	12				
MET	:008	0	1	2	3	4	5	6	7	8	9	10	11	12				
CDR HENRICKS	MEAL	SAREX	P/TV23 SETUP	VCS OPS	SIN LIT	KS CELL UP	STEN VIM	AFEM 2 WAITR	AFEM 1 OBSV	PRIV MED	CREW PHOTO	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	SLEEP		
PLT KREGEL	MEAL	P-TVD	TVD1PREP	CCDRHWHON WILCKE	VCS OPS	WCS CONTACT	PGF1STAT	UMS13CAL	MMEDSOUXATER	BDRPSYS12A	CREW PHOTO	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	SLEEP		
MS1 LINNEHAN	CLEANUP	TVD1OHGD	MEAL	POST SLEEP	SAREX	PRE SLEEP	CREW PHOTO	PRE-MS1	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	SLEEP		
MS2 HELMS	MEAL	EXERCISE	TVD1PREP	TVD1PREP	TVD1PREP	TVD1PREP	CREW PHOTO	PRE SLEEP	PS RLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	SLEEP		
MS3 BRADY	MEAL	TVD1OHGD	TVD1PREP	TVD7ARM	TVD1PREP	TVD7ARM	CREW PHOTO	PRE-MS3	PS RLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	SLEEP		
PS1 FAVIER	TVD1OHGD	ALF3PFT	ERG20PS	ALF3PFT	ERRG20PS	CLEANUP	PRE SLEEP	CREW PHOTO	PRE-PS1	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	SLEEP	
PS2 THIRSK	POST SLEEP	TVD1OHGD	MEAL	EXERCISE	PRE SLEEP	CREW PHOTO	PRE-PS2	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	SLEEP
DAY/NIGHT																		
ORBIT		129	130	131	132	133	134	135	136									
TORS	E																	
DBND/INHB	W																	
ATT																		
NOTES:	@CDR PERSONAL CONTACT @MONROE ELEMENTARY, SANTA BARBARA, CA. @DTO 675 VOICE CNTRL OF CCTV BIAS -XLV,+ZVV																	


GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
181:02:49 / 181:14:49	008:12:00 / 009:00:00	180:21:49 / 181:09:49	/180 CDT	-1.4		JUNE 28, 1996	STS-78	FINAL	5/15/96						
CDT :180	22	23	0	CDT:181	1	2	3	4	5	6	7	8	9	0	MET:009
MET :008	12	13	14	15	16	17	18	19	20	21	22	23			
CDR HENRICKS	SLEEP			POST SLEEP	POST SLEEP	EXERCISE								MEAL	
PLT KREGEL	SLEEP			POST SLEEP										MEAL	
MS1 LINNEHAN	SLEEP			POST SLEEP										MEAL	
MS2 HELMS	SLEEP			POST SLEEP										MEAL	
MS3 BRADY	SLEEP			POST SLEEP										MEAL	
PS1 FAVIER	SLEEP			POST SLEEP										MEAL	
PS2 THIRSK	SLEEP			POST SLEEP										MEAL	
DAY/NIGHT ORBIT	137			138	139	140	141	142	143	144					
TDRS	E			W											
DBND/INH ATT	BIAS -XLV,+ZVV														
NOTES:	©CABIN TEMP CNTL RECONFIG ©RCRS RECONFIG ©MAPLE GROVE EDUC CENTER, NOVA SCOTIA														

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
182:02:49/ 182:14:49	009:12:00/ 010:00:00	181:21:49/ 182:09:49	/181 CDT	2.4	☉	JUNE 29, 1996	STS-78	FINAL	5/15/96						
CDT :181	22	23	0	CDT:182	1	2	3	4	5	6	7	8	9	0	MET:010
MET :009	12	13	14	15	16	17	18	19	20	21	22	23			
CDR HENRICKS	SLEEP		DSO 493	POST SLEEP	KC AER FILE	POST SLEEP	EXERCISE		SIGNIFY DMP	DTO 1126 VIDEO	BDP2BSV1	ST PERFORM DNDP	DAY-OFF	MEAL	CROWN
PLT KREGEL	SLEEP		DSO 493	POST SLEEP		BDP11DRP	UMS13CAL	EXERCISE				STATUS	SETUP	MEAL	CROWN
MS1 LINNEHAN	SLEEP		POST-MS1	POST SLEEP		D/P				TVD12XER	EXERCISE	PS RELEASE	TV DISSEMIN	MEAL	CROWN
MS2 HELMS	SLEEP		FD11	POST SLEEP		D/P	PGF2FIX				PGF2FIX	PGF2FIX	PGF2FIX	MEAL	CROWN
MS3 BRADY	SLEEP		POST-LEARN	POST SLEEP		D/P	POST SLEEP	PRE SLEEP			EXERCISE	SAREX		MEAL	CROWN
PS1 FAVIER	SLEEP		POST-LEARN	POST SLEEP		D/P	P-PGF		PS RELEASE	PGF2FIX	TV-PGF	PGF2FIX	PS RELEASE	MEAL	CROWN
PS2 THIRSK	SLEEP		POST-LEARN	POST SLEEP		D/P	PS RELEASE	EXERCISE				TV-PGF	PS RELEASE	MEAL	CROWN
DAY/NIGHT	[Bar chart showing day/night cycle]														
ORBIT	153	154	155	156	157	158	159	160	161						
TDRS	[Bar chart showing TDRS coverage]														
DBND/INHB	3 DEG														
ATT	BIAS -XLV,+ZVV														
NOTES:	TOOWOMBA HIGH, AUSTRALIA														

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/DOY	BETA	MOON	HOUSTON DATE		FLIGHT	EDITION	PUB. DATE
182:14:49 / 183:02:49		010:00:00 / 010:12:00		182:09:49 / 182:21:49		/182 CDT	4.4	☉	JUNE 30, 1996		STS-78	FINAL	5/15/96
CDT	:182	10	11	12	13	14	15	16	17	18	19	20	21
MET	:010												
CDR HENRICKS	CONF	DAY-OFF	PCRO IN VF F A M	DAY-OFF	PCRO IN VF F A M	MEM OBSV	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M
PLT KREGEL	CONF	DAY-OFF	PCRO IN VF F A M	DAY-OFF	PCRO IN VF F A M	PRE SLEEP	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M
MS1 LINNEHAN	CONF	DAY-OFF	PCRO IN VF F A M	DAY-OFF	PCRO IN VF F A M	PRE SLEEP	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M
MS2 HELMS	CONF	DAY-OFF	PCRO IN VF F A M	DAY-OFF	PCRO IN VF F A M	PRE SLEEP	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M
MS3 BRADY	CONF	DAY-OFF	PCRO IN VF F A M	DAY-OFF	PCRO IN VF F A M	PRE SLEEP	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M
PS1 FAVIER	CONF	DAY-OFF	PCRO IN VF F A M	DAY-OFF	PCRO IN VF F A M	PRE SLEEP	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M
PS2 THIRSK	CONF	DAY-OFF	PCRO IN VF F A M	DAY-OFF	PCRO IN VF F A M	PRE SLEEP	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M	PCRO IN VF F A M
DAY/NIGHT													
ORBIT		161	162	163	164	165	166	167	168	169			
TDRS	E W												
DBND/INHB													
ATT													
NOTES:													

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
183:02:49/ 183:14:49	010:12:00/ 011:00:00	182:21:49/ 183:09:49	/182 CDT	6.5	☉	JUNE 30, 1996	STS-78	FINAL	5/15/96						
CDT :182	22	23	0	CDT:183	1	2	3	4	5	6	7	8	9	0	MET:011
MET :010	12	13	14	15	16	17	18	19	20	21	22	23	0		
CDR HENRICKS	SLEEP	DSO 493	POST SLEEP										MEAL		
PLT KREGEL	SLEEP	POST-PLT DSO 493	POST SLEEP										MEAL		
MS1 LINNEHAN	SLEEP	POST-MS1	POST SLEEP										MEAL	POST SLEEP	
MS2 HELMS	SLEEP	POST-MS2	POST SLEEP										MEAL		
MS3 BRADY	SLEEP	POST-MS3	POST SLEEP										MEAL		
PS1 FAVIER	SLEEP	POST-PS1	POST SLEEP										MEAL		
PS2 THIRSK	SLEEP	POST-PS2	POST SLEEP										MEAL		
DAY/NIGHT ORBIT	169	170	171	172	173	174	175	176	177						
TDRS															
DBND/INH			H20-INHB												
ATT				BIAS -XLV,+ZVV											
NOTES:															

@DTO 623 CABIN AIR MON
 @VALLEY HEIGHTS HS, BLUE RAPIDS, KS
 @PS2 PERSONAL
 CREW CHOICE DWNLK

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON 	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
183:14:49/ 184:02:49		011:00:00/ 011:12:00		183:09:49/ 183:21:49		/183 CDT	8.6		JULY 1, 1996	STS-78	FINAL	5/15/96				
CDT	:183	0	10	11	12	13	14	15	16	17	18	19	20	21	12	
MET	:011	0	1	2	3	4	5	6	7	8	9	10	11	12		
CDR HENRICKS		BDDP16HVP	P/TVUS	VIP-EVNT	SINLIT	EXERCISE	KCHT VLD	AEMZKATR	AEMZKATR	PRIVMND	CRONF	PRE SLEEP	XCAF FILE	TAG-UP	PRE SLEEP	SLEEP
PLT KREGEL		BDDP16HVP	EXERCISE	POST SLEEP	PGF15A	STPERM	BDDP52A	M	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP	
MS1 LINNEHAN		POST	EXERCISE	EXERCISE	SACNOPS	PRE SLEEP	PRE-MS1	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP	
MS2 HELMS	FD 1	MEAL	TVDBOPER	SL CNDS TK DUMP	PRE SLEEP	PRE-MS2	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP	
MS3 BRADY	2	MEAL	EXERCISE	PRE-MS3	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP	
PS1 FAVIER		TVDBRLEG	TVDBRLEG	FATIG19S	FATIG19S	FATIG19S	FATIG19S	PRE SLEEP	SACNOPS	PRE-PS1	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	SLEEP	
PS2 THIRSK		TVDBRLEG	VIP-EVNT	TVDBRLEG	FATIG19S	FATIG19S	FATIG19S	PRE SLEEP	SACNOPS	PRE-PS2	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	SLEEP	
DAY/NIGHT ORBIT		177	178	179	180	181	182	183	184	185						
TDRS	E															
DBND/INH ATT	W															
NOTES:		CREW CHOICE DWNLK														
		BIAS -XLV,+ZVV														

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
184:02:49/ 184:14:49	011:12:00/ 012:00:00	183:21:49/ 184:09:49	/183 CDT	10.8	☉	JULY 1, 1996	STS-78	FINAL	5/15/96						
CDT :183	22	23	0	CDT:184	1	2	3	4	5	6	7	8	9	0	MET:012
MET :011	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
CDR HENRICKS	SLEEP	DSO 493	POST SLEEP	KICK OFF KLEBER POSSIEP	EXERCISE	P/T TV25	PA EVENT	TV TRF	DT 623	ME 2000	ME 2000	STA TUS	CC RHW WIL CKE	MEAL	UM SICAL
PLT KREGEL	SLEEP	POST-PLT DSO 493	POST SLEEP	TV D800 P P A L F E	EXERCISE	TV D800 P P A L F E	AG 5N A S A 2	AG 5N A S A 2	AG 5N A S A 2	AG 5N A S A 2	EXERCISE	MEAL	POST SLEEP	TV D90 P P E R	TV D90 P P E R
MS1 LINNEHAN	SLEEP	POST-MS1	POST SLEEP	TV D12 X F R	D/P ALF1 PREP	POST SLEEP	EXERCISE	TV D12 X F R	TV D12 X F R	TV D12 X F R	MEAL	TV D1 P P R E P	TV D9 L L E G	TV D9 L L E G	TV D9 L L E G
MS2 HELMS	SLEEP	POST-MS2	POST SLEEP	D/P POST SLEEP	POST SLEEP	AG 5N A S A 2	AG 5N A S A 2	AG 5N A S A 2	AG 5N A S A 2	EXERCISE	MEAL	TV P P G F	PGF2 FIX	PGF2 FIX	PGF2 FIX
MS3 BRADY	SLEEP	POST-MS3	POST SLEEP	TV D1 P P R E P	POST SLEEP	ALF3 PFT	ERG2 OPS	ALF3 PFT	ERG2 OPS	ALF3 PFT	ERG2 OPS	CLE ANUP	TV D1 P P R E P	SAC 2 O P S	MEAL
PS1 FAVIER	SLEEP	POST-PS1	POST SLEEP	D/P POST SLEEP	POST SLEEP	EXERCISE	TR E I D O N	TR E I D O N	TR E I D O N	TR E I D O N	MEAL	P-P G F	P G F 2 F I X	P G F 2 F I X	P G F 2 F I X
PS2 THIRSK	SLEEP	POST-PS2	POST SLEEP	D/P TV D1 P P R E P	TV D8 R L E G	TV D8 R L E G	TV D8 R L E G	TV D8 R L E G	TV D8 R L E G	TV D8 R L E G	MEAL	POST SLEEP	ALF3 PFT	ERG2 OPS	ERG2 OPS
DAY/NIGHT	[Bar chart showing day/night cycle]														
ORBIT	185	186	187	188	189	190	191	192	193						
TORS	[Bar chart showing TORS]														
DBND/INHB	[Bar chart showing DBND/INHB]														
AIT	[Bar chart showing AIT]														
NOTES:	BIAS -XLV,+ZVV @DTO 623 CABIN AIR MON														

GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE			
184:14:49/ 185:02:49		012:00:00/ 012:12:00		184:09:49/ 184:21:49		/184 CDT	13.0	☉	JULY 2, 1996	STS-78	FINAL	5/15/96			
CDT :184		:10		:11		:12		:13		:14		:15			
MET :012		0		1		2		3		4		5			
CDR HENRICKS	U M E A L	S I N G L E	T V 1 B O A R D	B B D S S U B				S T I M U L A T I O N S	S I M U L A T I O N S	A F T E R B O O N	C O M M E N T	P R E S L E E P	T A G - U P	P R E S L E E P	S L E E P
PLT KREGEL	T V D O O P P R E	T V D O O P P R E	A F T E R B O O N	M C P M A C I T	A F T E R B O O N	T V D O O P P R E	T V D O O P P R E	T V D O O P P R E	T V D O O P P R E	T V D O O P P R E		P R E S L E E P	T A G - U P	P R E S L E E P	S L E E P
MS1 LINNEHAN	T V D O O P P R E	T V D O O P P R E	T V D O O P P R E			P R E S L E E P		S A C C O P S			P R E - M S 1	P R E S L E E P	T A G - U P	P R E S L E E P	S L E E P
MS2 HELMS	F D 1 3		P G F 2 F I X			P G I S T A T			P R E S L E E P	P R E S L E E P		P R E S L E E P	T A G - U P	P R E S L E E P	S L E E P
MS3 BRADY	M E A L	P R E S L E E P		T V D O O P P R E	T V D O O P P R E	T V D O O P P R E	T V D O O P P R E	T V D O O P P R E	T V D O O P P R E	T V D O O P P R E		P R E - M S 3	T A G - U P	P R E S L E E P	S L E E P
PS1 FAVIER	P G F 2 F I X	P G F 2 F I X	T V - P G F			P G F 2 F I X	S A C C O P S		P R E S L E E P	P R E - P S 1	P R E S L E E P	T A G - U P	P R E S L E E P	S L E E P	
PS2 THIRSK	E R G 2 O P S	A L F 3 P F T	E R G N O O P S	C L E A N U P	S C R O O B	P R E S L E E P	P O S T	S A C C O P S			P R E - P S 2	P R E S L E E P	T A G - U P	P R E S L E E P	S L E E P
DAY/NIGHT	ORBIT			193	194	195	196	197	198	199	200	201			
TDRS	E W														
DBND/INH													BIAS -XLV,+ZV		3 DEG/H2O-INHB
ATT														V PRE SLEEP	
NOTES:															

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE							
185:02:49 / 185:14:49	012:12:00 / 013:00:00	184:21:49 / 185:09:49	/184 CDT	15.3	☉	JULY 2, 1996	STS-78	FINAL	5/15/96							
CDT :184	22	23	0	CDT:185	1	2	3	4	5	6	7	8	9	0	MET:013	
MET :012	12	13	14	15	16	17	18	19	20	21	22	23				
CDR HENRICKS	SLEEP	DSO 493	POST SLEEP	KC A X F R F I L E	POST SLEEP	EXERCISE	P A W S O P S	T V E R G O	T V D 9 O P P E R	P E R R G O	T V D 3 P E M S	P E M S O P	P / T V S	S E T U P	V I P - E V N T	MEAL
PLT KREGEL	SLEEP	DSO 493	POST SLEEP	S T A T I O N C K	T V - P A W S	A G I O N A 2 B	D T O 6 2 3	C C D R H E O N W I L C K E	EXERCISE	P A W S O P S	MEAL					
MS1 LINNEHAN	SLEEP	P O S T - M S 1	POST SLEEP	D / P A L F 1 P R E P	T V - T V D	T V D 9 O P P E R	A L F 2 C A L	POST SLEEP	ALF3PFT	ERG20PS	ALF3PFT	F R G O P S	C L E A R U P	S A C C O N O P S	MEAL	
MS2 HELMS	SLEEP	F D 1 3	POST SLEEP	D / P	B D P 3 S U B	A G I O N A 2 B	A G I O N A 2 B	P A L F E	EXERCISE	S A R E X	MEAL	P A L F E	T V E R G O			
MS3 BRADY	SLEEP	POST-MS3	POST SLEEP	D / P	S O N O S	EXERCISE	POST SLEEP	PRE SLEEP	S A C C O N O P S	MEAL	T V D I P R E P	TVD7ARM				
PS1 FAVIER	SLEEP	P O S T - P S 1	POST SLEEP	D / P	T V D 1 P R E P	TVD9LLEG	T V D 3 P E M S	T V D 9 L L E G	P A W S O P S	S A C C O N O P S	POST SLEEP	MEAL	V I P - E V N T	S E C O N O S	ALF3PFT	F R G O P S
PS2 THIRSK	SLEEP	P O S T - P S 2	POST SLEEP	D / P	T V D 1 P R E P	P A W S O P S	POST SLEEP	T V D 3 P E M S	P E M S O P	T V D 9 L L E G	TVD9LLEG	TVD9LLEG	T V D I P R E P	S A C C O N O P S	MEAL	
DAY/NIGHT																
ORBIT	201 202 203 204 205 206 207 208 209															
TDRS																
DBND/INH/ATT	3 DEG															
NOTES:	BIAS -XLV, +ZVV @DTO 623 CABIN AIR MON @MS2 PERSONAL PRE SLEEP															

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
185:14:49/ 186:02:49	013:00:00/ 013:12:00	185:09:49/ 185:21:49	/185 CDT	17.6	☉	JULY 3, 1996	STS-78	FINAL	5/15/96				
CDT :185													
MET :013													
	0	1	2	3	4	5	6	7	8	9	10	11	12
CDR HENRICKS	SINFLYTD		STPRVND	STPRVND	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP
PLT KREGEL			PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP
MS1 LINNEHAN		PRE SLEEP	SACNDOPS	PRE-MS1	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP
MS2 HELMS	FD 14		PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP	PRE SLEEP
MS3 BRADY		TVD7ARM	PRE-MS3	PRE-MS3	PRE-MS3	PRE-MS3	PRE-MS3	PRE-MS3	PRE-MS3	PRE-MS3	PRE-MS3	PRE-MS3	PRE-MS3
PS1 FAVIER	ERG2OPS	SALF3PFT	PRE-PS1	PRE-PS1	PRE-PS1	PRE-PS1	PRE-PS1	PRE-PS1	PRE-PS1	PRE-PS1	PRE-PS1	PRE-PS1	PRE-PS1
PS2 THIRSK	PRE SLEEP	EXERCISE	PRE-PS2	PRE-PS2	PRE-PS2	PRE-PS2	PRE-PS2	PRE-PS2	PRE-PS2	PRE-PS2	PRE-PS2	PRE-PS2	PRE-PS2
DAY/NIGHT													
ORBIT	209	210	211	212	213	214	215	216	217				
TDRS													
DBND/INHBT													
ATT													
NOTES:													

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE							
186:02:49 / 186:14:49	013:12:00 / 014:00:00	185:21:49 / 186:09:49	/185 CDT	20.0	☉	JULY 3, 1996	STS-78	FINAL	5/15/96							
CDT :185	22	23	14	0	CDT:186	1	2	3	4	5	6	7	8	9	0	MET:014
MET :013	12	13	14	15	16	17	18	19	20	21	22	23				
CDR HENRICKS	SLEEP	DSO 493	POST SLEEP	POST SLEEP	EXERCISE											
PLT KREGEL	SLEEP	DSO 493	POST SLEEP													
MS1 LINNEHAN	SLEEP	POST-MS1	POST SLEEP	D/P												
MS2 HELMS	SLEEP	POST-MS2	POST SLEEP	D/P												
MS3 BRADY	SLEEP	POST-MS3	POST SLEEP	D/P												
PS1 FAVIER	SLEEP	POST-PS1	POST SLEEP	D/P												
PS2 THIRSK	SLEEP	POST-PS2	POST SLEEP	D/P												
DAY/NIGHT																
ORBIT	217	218	219	220	221	222	223	224	225							
TDRS																
DBND/INHB																
ATT																
NOTES:																

BIAS -XLV,+ZVV

ⓂDTO 675 VOICE CNTRL OF CCTV

ⓂDTO 675 VOICE CNTRL OF CCTV

ⓂPS1 PERSONAL

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE
186:14:49/ 187:02:49	014:00:00/ 014:12:00	186:09:49/ 186:21:49	/186 CDT	22.3		JULY 4, 1996	STS-78	FINAL	5/15/96

CDT :186	10	11	12	13	14	15	16	17	18	19	20	21	12
MET :014	0	1	2	3	4	5	6	7	8	9	10	11	12

CDR HENRICKS	FILET	VCS DEACT	SAREX	SAREX STOW	KSCE AT U/D	D/O PREP BRIEF	CONV MED	PRE SLEEP	TAG-UP	KCFER	PRE SLEEP	SLEEP
	FILET	VCS DEACT	SAREX	SAREX STOW	KSCE AT U/D	D/O PREP BRIEF	CONV MED	PRE SLEEP	TAG-UP	KCFER	PRE SLEEP	SLEEP
PLT KREGEL	FILET	UMS13CAL	PGF1 STAT	AEM2 WATER	AEM1 OBSV	D/O PREP BRIEF	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP		
	FILET	UMS13CAL	PGF1 STAT	AEM2 WATER	AEM1 OBSV	D/O PREP BRIEF	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP		
MS1 LINNEHAN	FILET	EXERCISE	D/O PREP BRIEF	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP					
	FILET	EXERCISE	D/O PREP BRIEF	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP					
MS2 HELMS	FILET	COI30PER	COI40PER	COI50PER	D/O PREP BRIEF	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP			
	FILET	COI30PER	COI40PER	COI50PER	D/O PREP BRIEF	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP			
MS3 BRADY	FILET	POST SLEEP	PRE SLEEP	D/O PREP BRIEF	PRE-MS3	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP			
	FILET	POST SLEEP	PRE SLEEP	D/O PREP BRIEF	PRE-MS3	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP			
PS1 FAVIER	FILET	TVD7ARM	D/O PREP BRIEF	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP					
	FILET	TVD7ARM	D/O PREP BRIEF	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP					
PS2 THIRSK	FILET	COIS3VHM	COIS4OKN	COIS6STO	D/O PREP BRIEF	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP			
	FILET	COIS3VHM	COIS4OKN	COIS6STO	D/O PREP BRIEF	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP			

DAY/NIGHT	225	226	227	228	229	230	231	232	233
ORBIT									
TDRS									
DBND/INHB									
ATT									

NOTES: Δ PRE SLEEP @BACKUP
 @DTG 675 VOICE CNTRL OF CCTV
 BIAS -XLV,+ZVV

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE									
187:02:49 / 187:14:49	014:12:00 / 015:00:00	186:21:49 / 187:09:49	/186 CDT	24.7	☉	JULY 4, 1996	STS-78	FINAL	5/15/96									
CDT :186	22	23	0	CDT:187	1	2	3	4	5	6	7	8	9	0	MET:015			
MET :014	12	13	14	15	16	17	18	19	20	21	22	23						
CDR HENRICKS	SLEEP	DSO 493	POST SLEEP	+ZSV1 +ZSV2 +ZSV3 +ZSV4 +ZSV5 +ZSV6 +ZSV7 +ZSV8 +ZSV9 +ZSV10 +ZSV11 +ZSV12 +ZSV13 +ZSV14 +ZSV15 +ZSV16 +ZSV17 +ZSV18 +ZSV19 +ZSV20 +ZSV21 +ZSV22 +ZSV23 +ZSV24 +ZSV25 +ZSV26 +ZSV27 +ZSV28 +ZSV29 +ZSV30 +ZSV31 +ZSV32 +ZSV33 +ZSV34 +ZSV35 +ZSV36 +ZSV37 +ZSV38 +ZSV39 +ZSV40 +ZSV41 +ZSV42 +ZSV43 +ZSV44 +ZSV45 +ZSV46 +ZSV47 +ZSV48 +ZSV49 +ZSV50 +ZSV51 +ZSV52 +ZSV53 +ZSV54 +ZSV55 +ZSV56 +ZSV57 +ZSV58 +ZSV59 +ZSV60 +ZSV61 +ZSV62 +ZSV63 +ZSV64 +ZSV65 +ZSV66 +ZSV67 +ZSV68 +ZSV69 +ZSV70 +ZSV71 +ZSV72 +ZSV73 +ZSV74 +ZSV75 +ZSV76 +ZSV77 +ZSV78 +ZSV79 +ZSV80 +ZSV81 +ZSV82 +ZSV83 +ZSV84 +ZSV85 +ZSV86 +ZSV87 +ZSV88 +ZSV89 +ZSV90 +ZSV91 +ZSV92 +ZSV93 +ZSV94 +ZSV95 +ZSV96 +ZSV97 +ZSV98 +ZSV99 +ZSV100	POST SLEEP	FCS C/O	EXERCISE	MEAL	L-1 COMM CK	ERG MTR STOW	RCS BURN	CS AT 015 ZSV IN						
PLT KREGEL	SLEEP	POST-PLT DSO 493	POST SLEEP	POST SLEEP	FCS C/O	EXERCISE	MEAL	ERG MTR STOW	RCS BURN	CS AT 015 ZSV IN								
MS1 LINNEHAN	SLEEP	POST-MS1	POST SLEEP	D/P	TVD9LLEG	POST SLEEP TVD9OPEP	EXERCISE	ALF7PFT	MEAL	TVD5MOTR TVD6PEMS ALF6STO TVD1ISTO	P/L DEACT	DEACT						
MS2 HELMS	SLEEP	FD 1 POST-MS2	POST SLEEP	D/P	POST SLEEP	FCS C/O	EXERCISE	PEMS90P TVD3PEMS TVD9OPEP	MEAL	MMS1IDEA MMS2IDEA MMS3IDEA MMS4IDEA MMS5IDEA MMS6IDEA MMS7IDEA MMS8IDEA MMS9IDEA MMS10IDEA MMS11IDEA MMS12IDEA MMS13IDEA MMS14IDEA MMS15IDEA MMS16IDEA MMS17IDEA MMS18IDEA MMS19IDEA MMS20IDEA MMS21IDEA MMS22IDEA MMS23IDEA MMS24IDEA MMS25IDEA MMS26IDEA MMS27IDEA MMS28IDEA MMS29IDEA MMS30IDEA MMS31IDEA MMS32IDEA MMS33IDEA MMS34IDEA MMS35IDEA MMS36IDEA MMS37IDEA MMS38IDEA MMS39IDEA MMS40IDEA MMS41IDEA MMS42IDEA MMS43IDEA MMS44IDEA MMS45IDEA MMS46IDEA MMS47IDEA MMS48IDEA MMS49IDEA MMS50IDEA MMS51IDEA MMS52IDEA MMS53IDEA MMS54IDEA MMS55IDEA MMS56IDEA MMS57IDEA MMS58IDEA MMS59IDEA MMS60IDEA MMS61IDEA MMS62IDEA MMS63IDEA MMS64IDEA MMS65IDEA MMS66IDEA MMS67IDEA MMS68IDEA MMS69IDEA MMS70IDEA MMS71IDEA MMS72IDEA MMS73IDEA MMS74IDEA MMS75IDEA MMS76IDEA MMS77IDEA MMS78IDEA MMS79IDEA MMS80IDEA MMS81IDEA MMS82IDEA MMS83IDEA MMS84IDEA MMS85IDEA MMS86IDEA MMS87IDEA MMS88IDEA MMS89IDEA MMS90IDEA MMS91IDEA MMS92IDEA MMS93IDEA MMS94IDEA MMS95IDEA MMS96IDEA MMS97IDEA MMS98IDEA MMS99IDEA MMS100IDEA	POST SLEEP	DEACT						
MS3 BRADY	SLEEP	FD 5 POST-MS3	POST SLEEP	D/P	POST SLEEP	TVD9LLEG	EXERCISE	ALF7PFT	MEAL	POST SLEEP TVD3PEMS TVD9OPEP	POST SLEEP	DEACT						
PS1 FAVIER	SLEEP	POST-PS1	POST SLEEP	D/P	EXERCISE	ALF7PFT	TVD9LLEG	POST SLEEP PS RLEP	MEAL	ERG MTR STOW ALF6STO AGH2DEAC	POST SLEEP	DEACT						
PS2 THIRSK	SLEEP	POST-PS2	POST SLEEP	D/P	EXERCISE	ALF7PFT	TVD9LLEG	MEAL	TVD1ISTO			DEACT						
DAY/NIGHT ORBIT	233		234		235		236		237		238		239		240		241	
TDRS	E		W															
DBND/INH ATT	BIAS -XLV,+ZVV						+ZS1						+ZS1					
NOTES:					○ APU HTR ACT ○ DTO 623 CABIN AIR MON				● -XLV, -ZVV ■ APU HTR RECONFIG								▶ KU-BD STOW	

GMT (D:H:M)	MET (D:H:M)	CDT (D:H:M)	FD/DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE				
187:14:49 / 188:02:49	015:00:00 / 015:12:00	187:09:49 / 187:21:49	/187 CDT	27.1	☉	JULY 5, 1996	STS-78	FINAL	5/15/96				
CDT :187	10	11	12	13	14	15	16	17	18	19	20	21	12
MET :015	0	1	2	3	4	5	6	7	8	9	10	11	12
CDR HENRICKS	CABIN STOW		MEMORIAL OBSV	ARRIVAL	PRE SLEEP	TAG-UP	PRE SLEEP	PRE SLEEP	SLEEP				
PLT KREGEL	CABIN STOW		MNVR	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP						
MS1 LINNEHAN	S/L DEACT	S/L DEACT	CABIN STOW	PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP					
MS2 HELMS	S/L DEACT	S/L DEACT	CABIN STOW	PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP					
MS3 BRADY	CABIN STOW			PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP					
PS1 FAVIER	CABIN STOW	CABIN STOW	PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP						
PS2 THIRSK	CABIN STOW	CABIN STOW	PRE SLEEP	PRE SLEEP	TAG-UP	PRE SLEEP	SLEEP						
DAY/NIGHT	[Day/Night Cycle]												
ORBIT	241	242	243	244	245	246	247	248	249				
TDRS	[TDRS Schedule]												
DBND/INHB	[DBND/INHB Schedule]												
ATT	+ZSI			-ZSI			-ZLV, -XVV						
NOTES:	[Notes Section]												

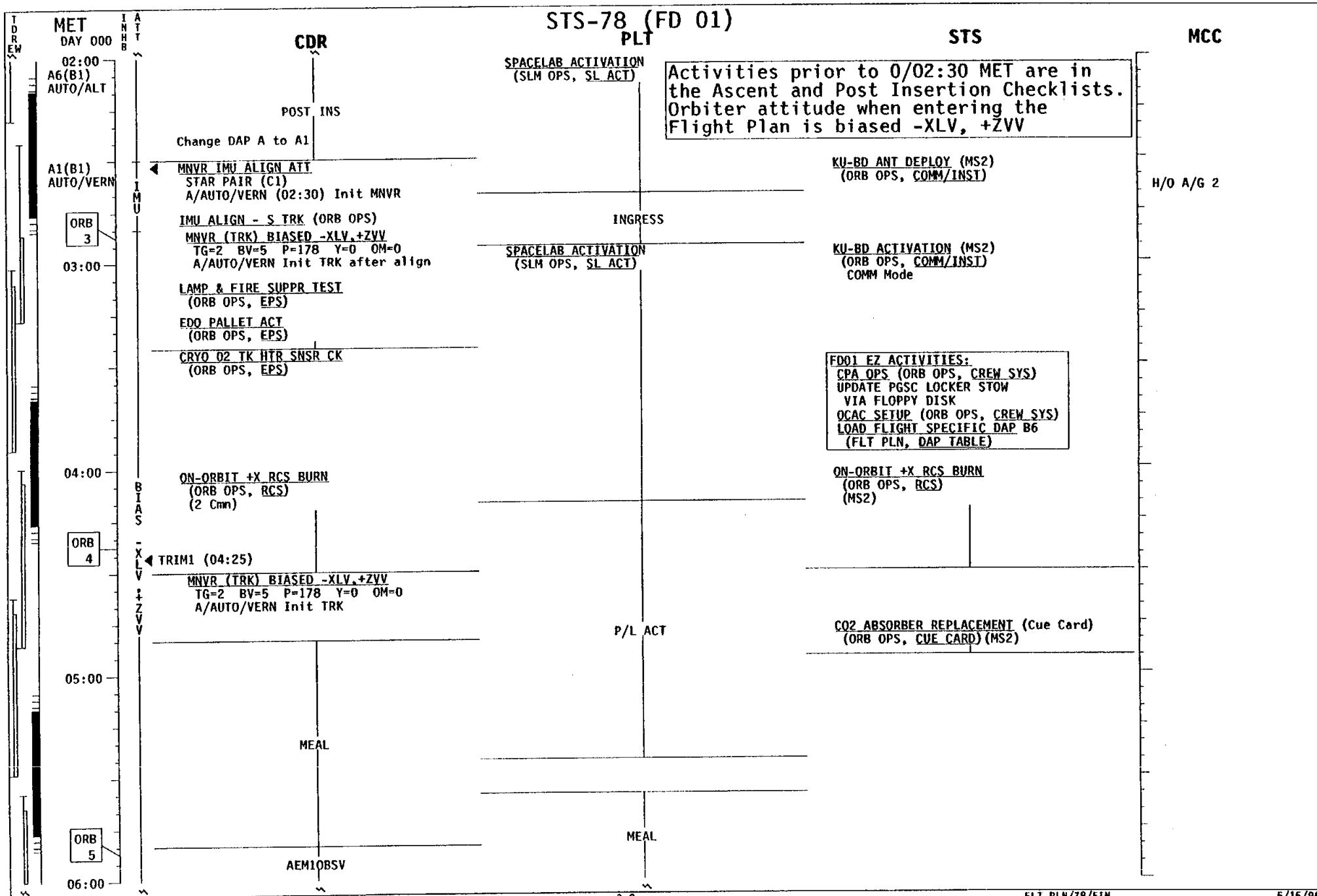
GMT (D:H:M)		MET (D:H:M)		CDT (D:H:M)		FD/ DOY	BETA	MOON	HOUSTON DATE	FLIGHT	EDITION	PUB. DATE						
188:02:49/ 188:14:49		015:12:00/ 016:00:00		187:21:49/ 188:09:49		/187 CDT	29.5		JULY 5, 1996	STS-78	FINAL	5/15/96						
CDT :187		22	23	CDT:188		1	2	3	4	5	6	7	8	9	0 MET:016			
MET :015		12	13	14	15	16	17	18	19	20	21	22	23					
CDR HENRICKS	SLEEP	DSO 493	POST SLEEP			CONTRIV MED	FIX SVR	MNVR	DEORBIT PREP	IMU	IAP MLT UTB GDN OPS	DEORBIT PREP						
PLT KREGEL	SLEEP	DSO 493	POST SLEEP			PG WR RP UB P	DEORBIT PREP											
MS1 LINNEHAN	SLEEP	POST-MS1	POST SLEEP			DEORBIT PREP								DEORBIT	KSC			
MS2 HELMS	SLEEP	FD 1	POST SLEEP			DEORBIT PREP								LANDING				
MS3 BRADY	SLEEP	FD 7	POST-MS3	RESISTO	RESTORATION	POST SLEEP			DEORBIT PREP								BURN	
PS1 FAVIER	SLEEP	POST-MS1	POST SLEEP			DEORBIT PREP												
PS2 THIRSK	SLEEP	POST-MS3	SLEEP	RESISTO	RESTORATION	POST SLEEP			DEORBIT PREP									
DAY/NIGHT ORBIT	249		250		251		252		253		254		255		256		257	
TDRS	E																W	
DBND/INHB ATT				-ZLV, -XVV						-XSI			COMM			ENTRY		
NOTES:	▲ AUTO FC PURGE											@TIG=15/21:20 o BURN MNVR ♦ KSC LANDING 15/22:20						

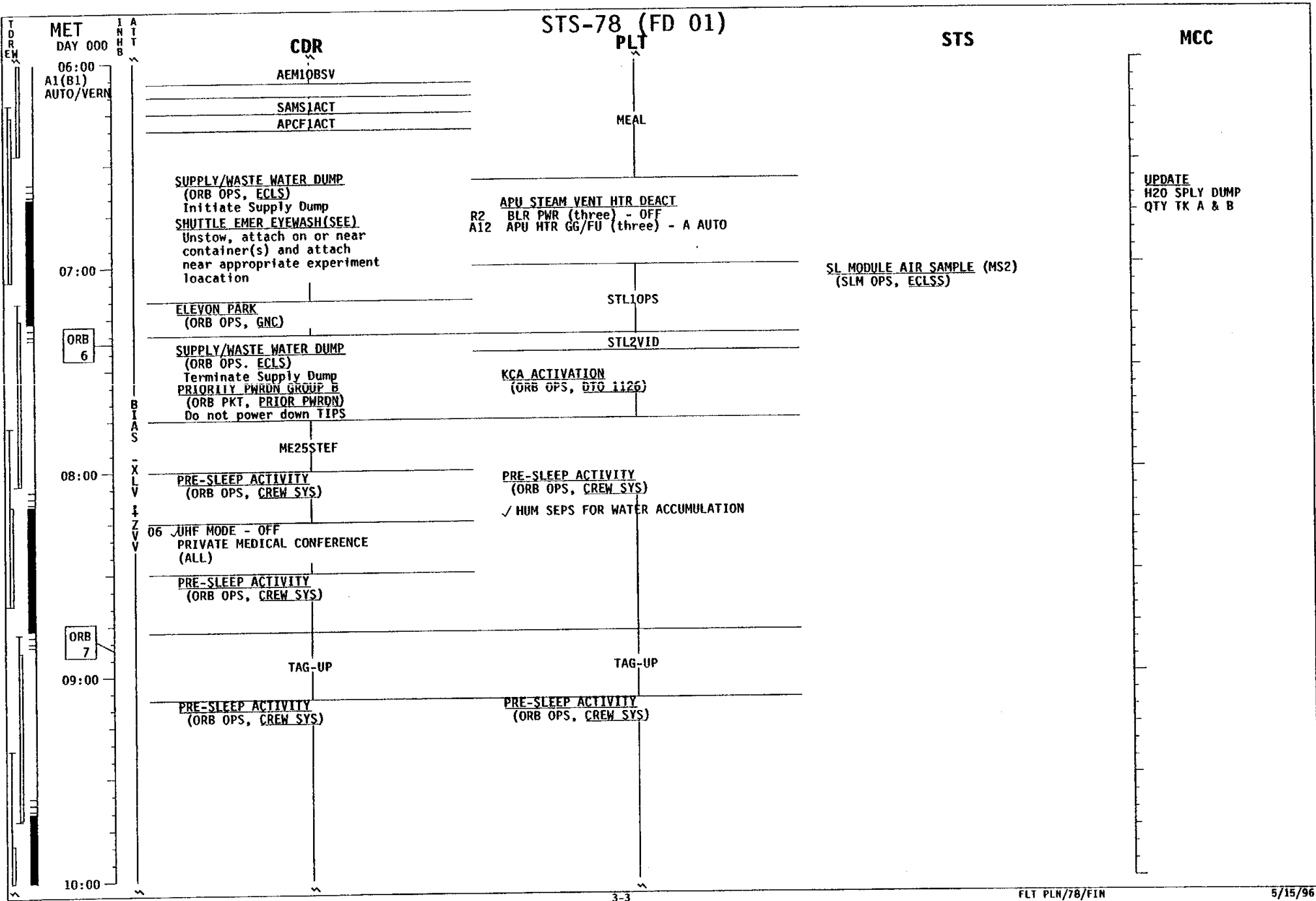
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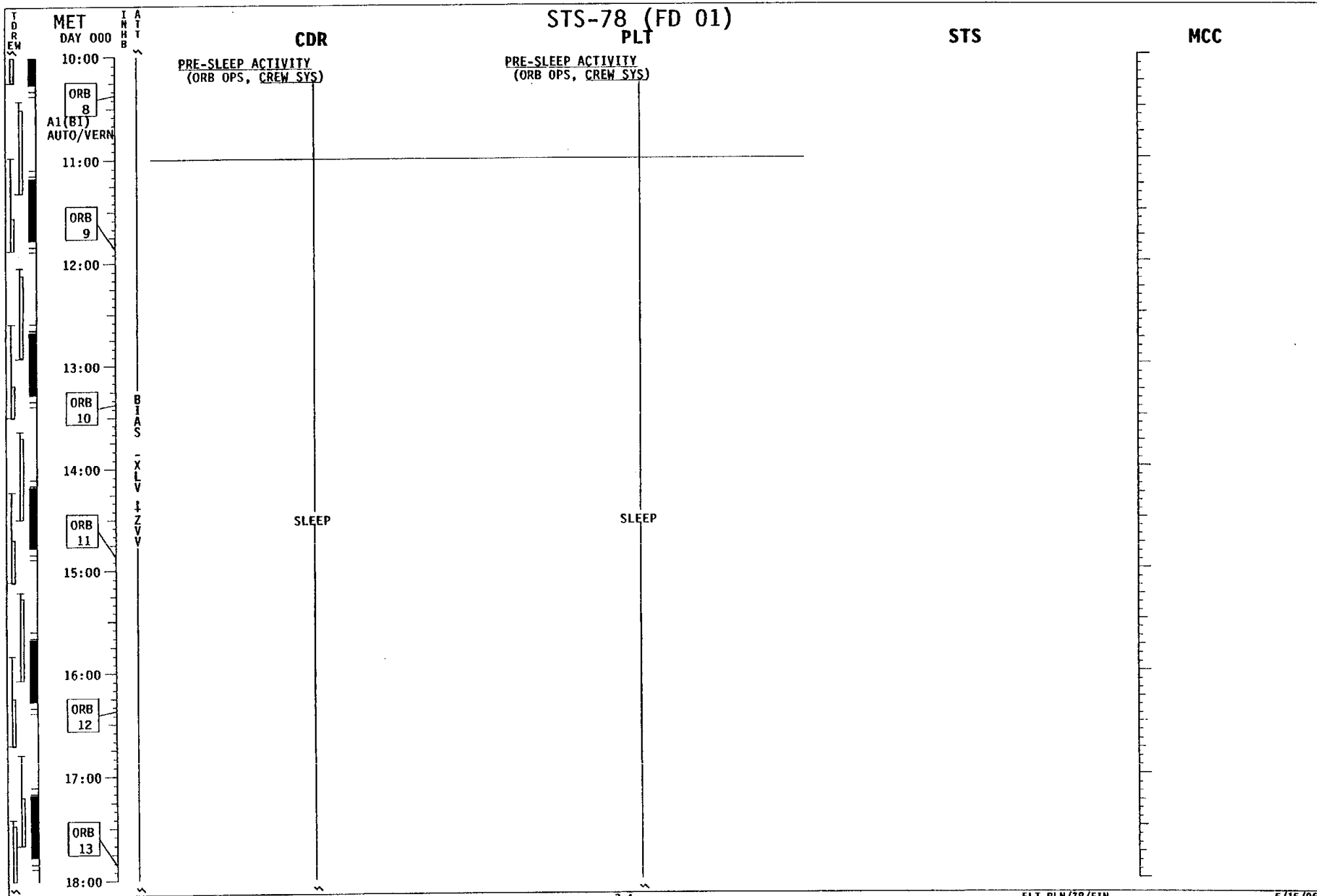
DETAILED TIMELINE

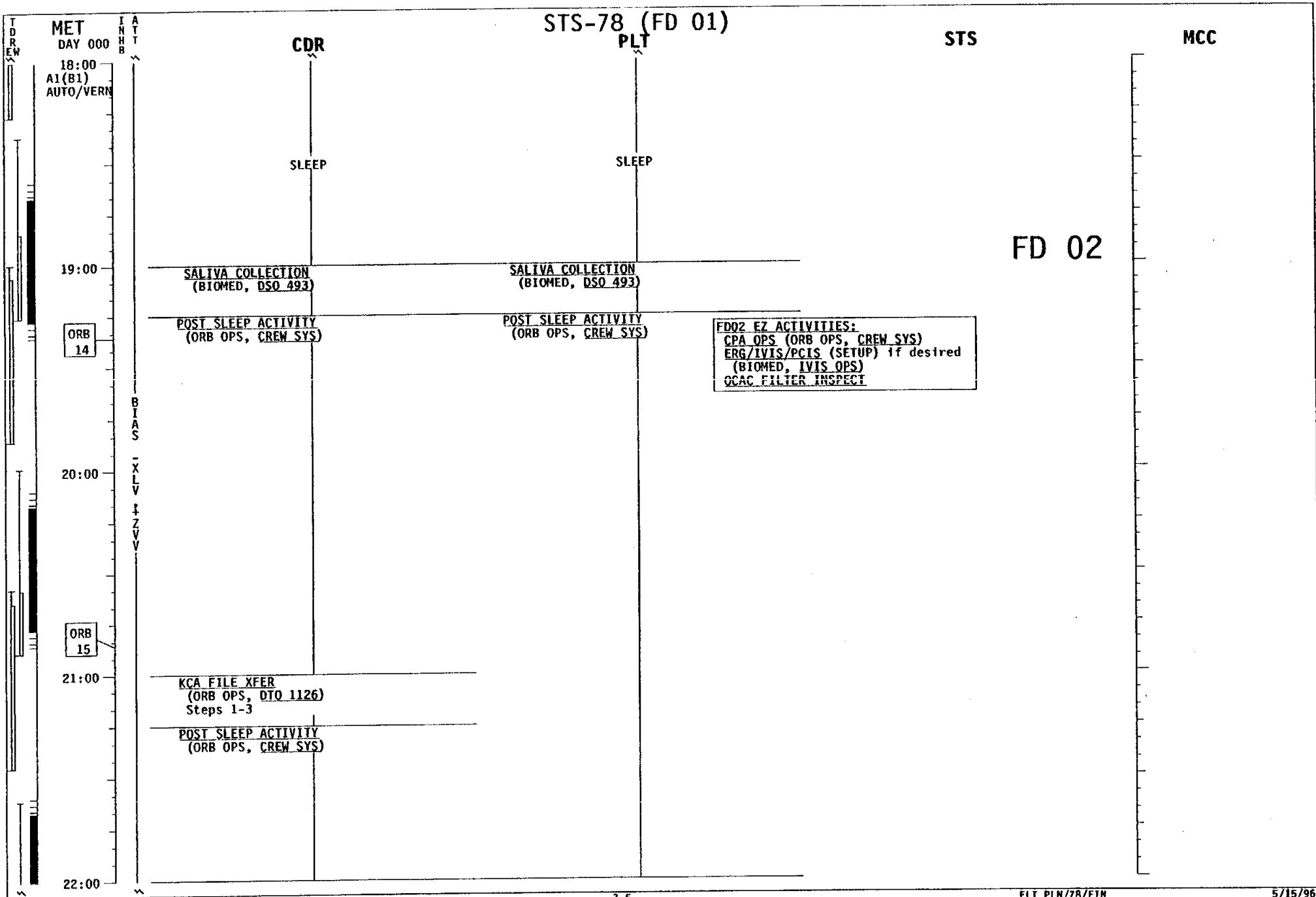
DETAILED
TIMELINE

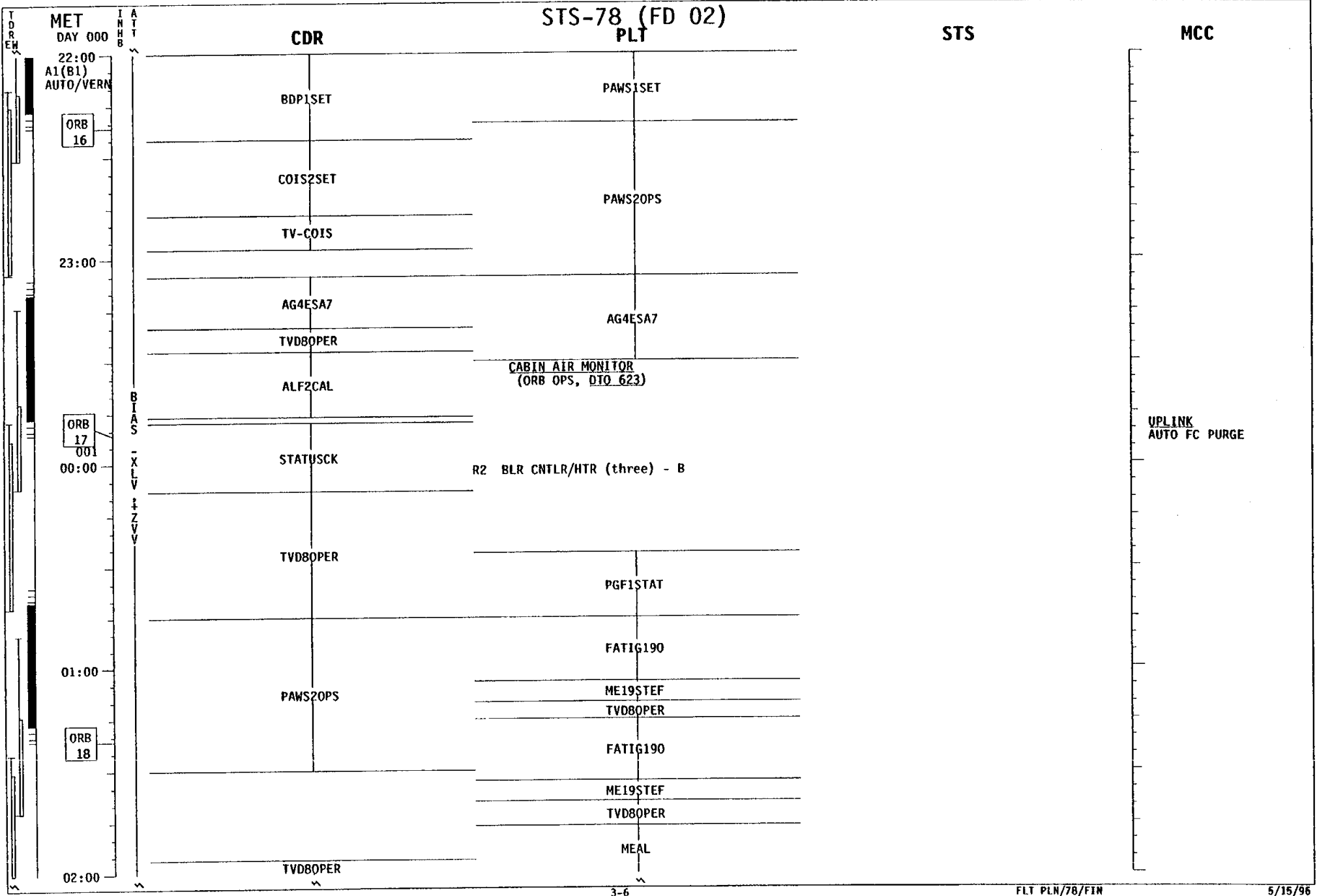
DETAILED TIMELINE











STS-78 (FD 02)

CDR

PLT

STS

MCC

MET DAY 000

22:00
A1(B1)
AUTO/VERN

ORB
16

23:00

ORB
17
001
00:00

01:00

ORB
18

02:00

BDP1SET

COIS2SET

TV-COIS

AG4ESA7

TVD8OPER

ALF2CAL

STATUSCK

TVD8OPER

PAWS20PS

TVD8OPER

PAWS1SET

PAWS20PS

AG4ESA7

CABIN AIR MONITOR
(ORB OPS, DTO 623)

R2 BLR CNTLR/HTR (three) - B

PGF1STAT

FATIG190

ME19STEF

TVD8OPER

FATIG190

ME19STEF

TVD8OPER

MEAL

UPLINK
AUTO FC PURGE

STS-78 (FD 02)

MET
DAY 001

02:00
A1(B1)
AUTO/VERN

ORB
19

03:00

04:00

ORB
20

05:00

ORB
21

06:00

INHT
B

BIAS
X
L
V
Z
V
V

CDR

TVDBOPER

ME20CENT

TVDBOPER

ME20CENT

TVDBOPER

STL2VID

TVDBOPER

MEAL

AEM10BSV

SUPPLY/WASTE WATER DUMP
(ORB OPS, ECLS)
Initiate Supply Dump

CREW CHOICE DOWNLINK
KU AVAIL 05:45 TO 06:05

PLT

MEAL

AG4ESA7

TVDBOPER

ALF5URY

TVDBOPER

FATIG190

ME19STEF

TVDBOPER

FATIG190

ME19STEF

TVDBOPER

SAC1SET

ME20CENT

AG4ESA7

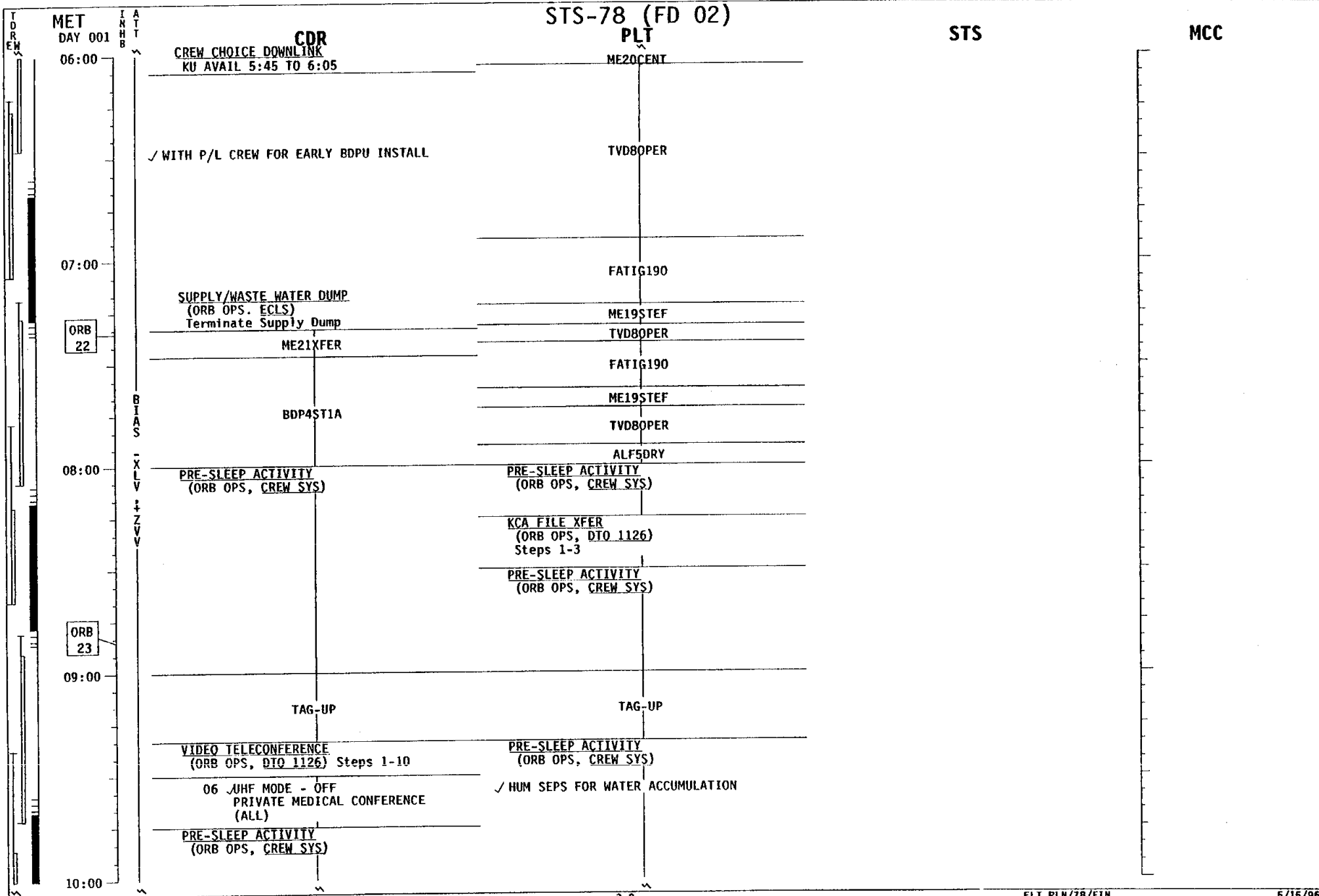
TVDBOPER

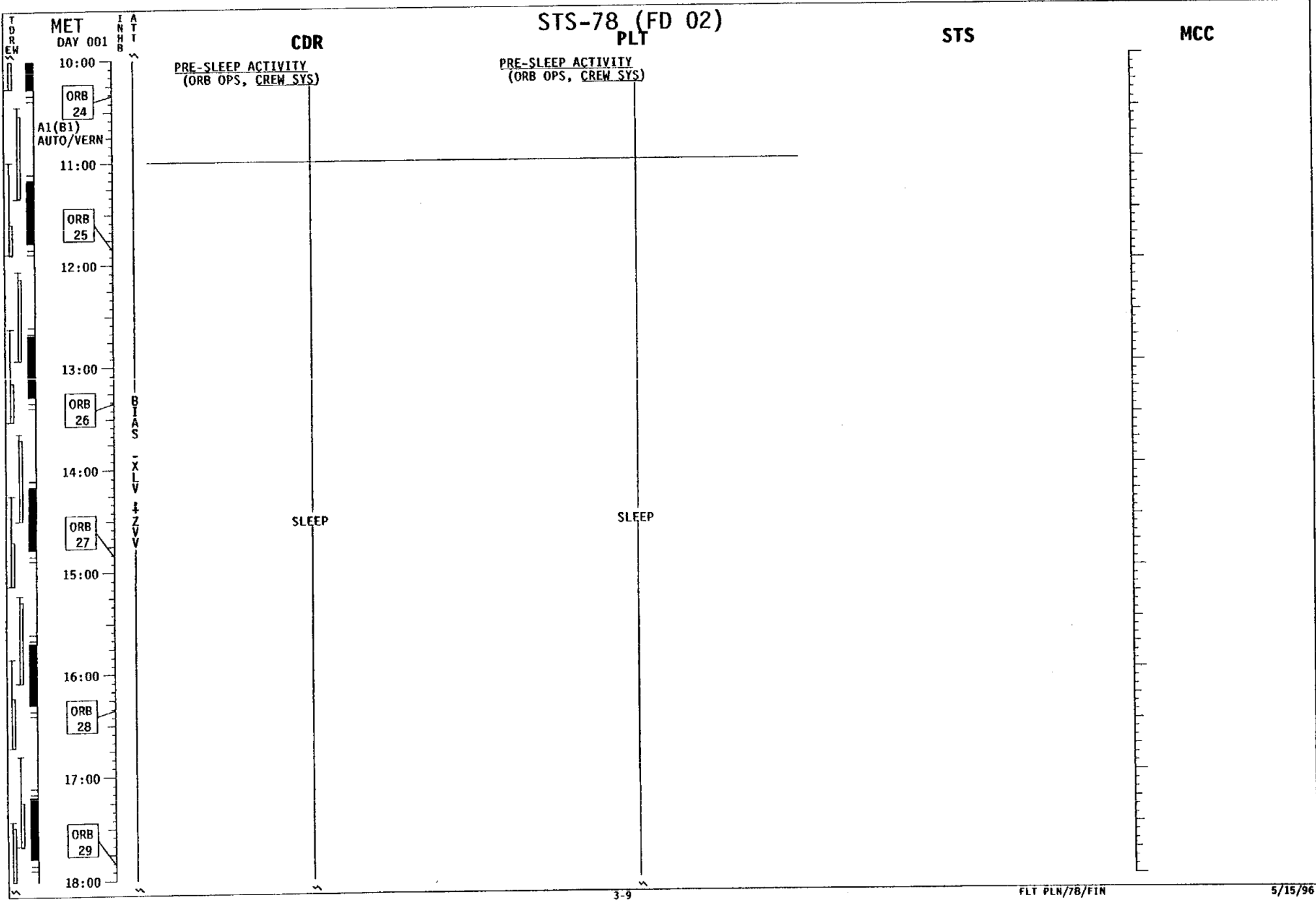
ME20CENT

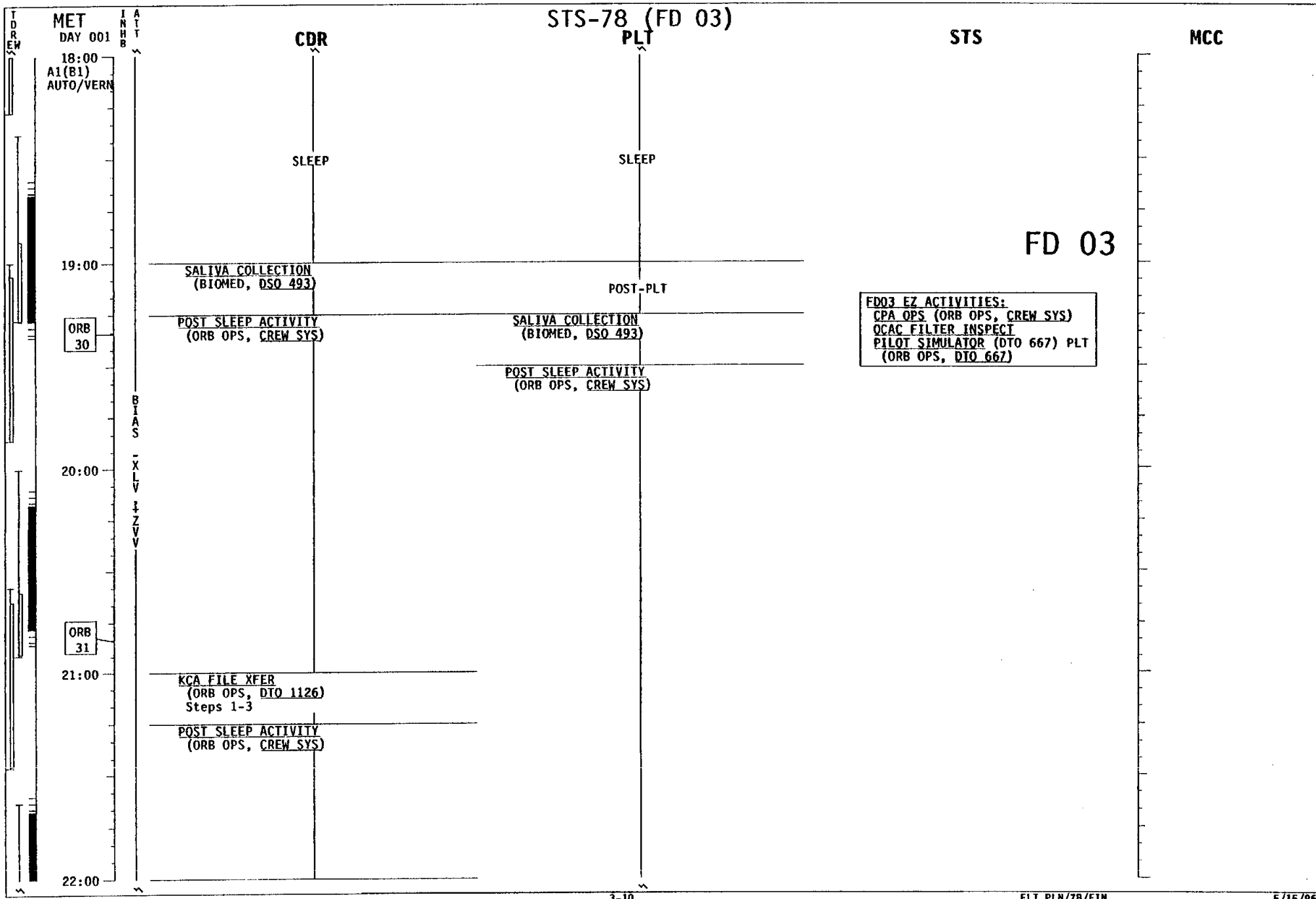
STS

MCC

UPDATE
H2O SPLY DUMP
QTY TK A & B







T
D
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E
X

MET
DAY 001

I
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H
B

STS-78 (FD 03) PLT

STS

MCC

22:00
A1(B1)
AUTO/VERN

CDR

TV-PAWS

POST SLEEP ACTIVITY
(ORB OPS, CREW SYS)

SAMS1DSK

ORB
32

ERG/IVIS/PCIS (SETUP)
(BIOMED, IVIS OPS)

AG6ESA5A

23:00

BDP4ST1D

P/TV23 SETUP(DTO 675)
(PHOTO/TV, SCENES)

ORB
33

VCS UNSTOW/CONFIG
(PL OPS, VCS)

PGF4BEND

00:00

VCS EXERCISE
(PL OPS, VCS)

STATUSCK

01:00

SAREX SETUP
(PL OPS, SAREX)

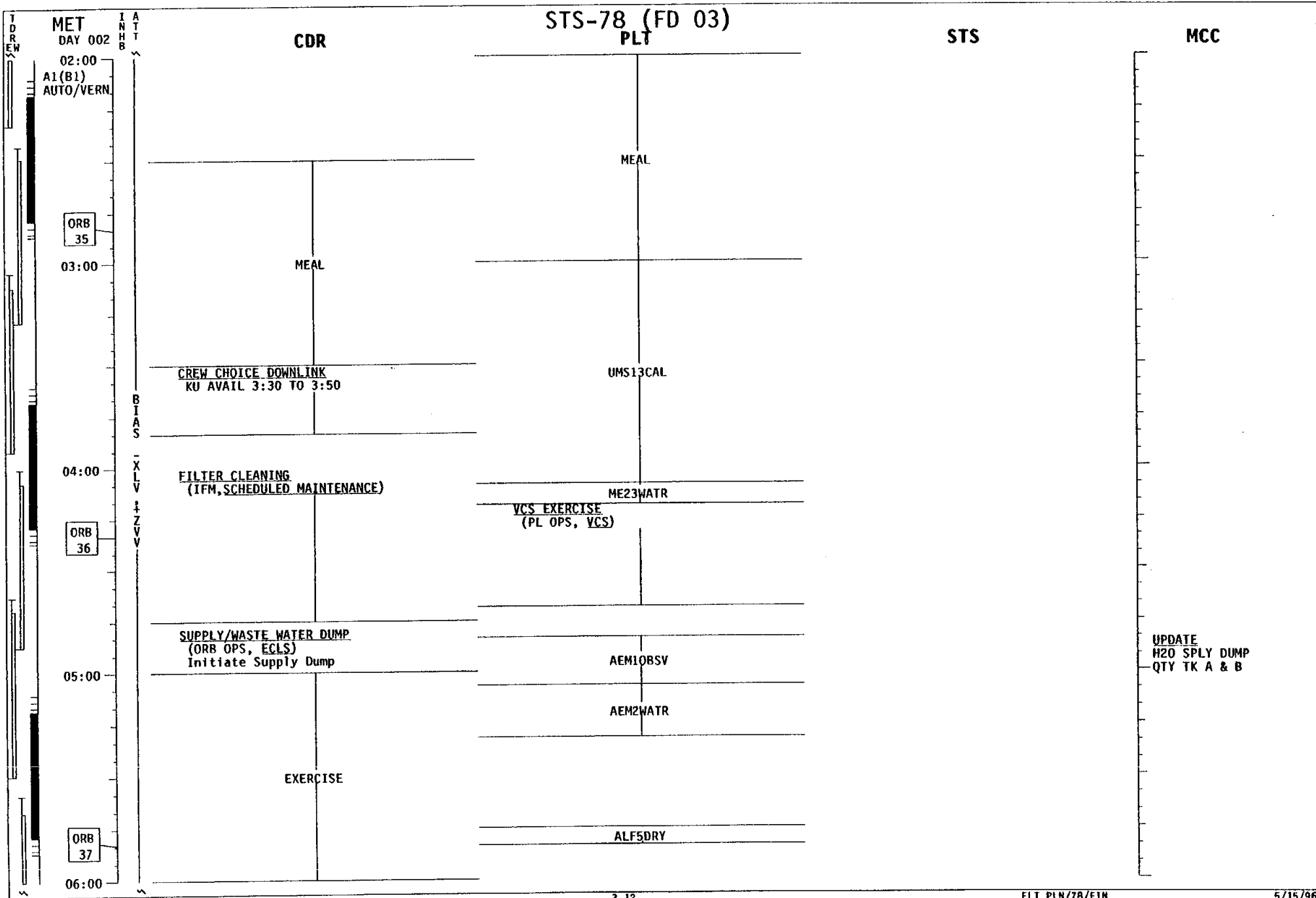
EXERCISE

ORB
34

VOICE OPS(TEST, W5RRR)
(PL OPS, SAREX)
RISE=01:33 SET=01:40
W6, CONTACT T1

02:00

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V



STS-78 (FD 03)
PLT

STS

MCC

CDR

MET
DAY 002

INT
H
B

06:00
A1(B1)
AUTO/VERN

SUPPLY/WASTE WATER DUMP
(ORB OPS, ECLS)
Terminate Supply Dump
VIDEO TELECONFERENCING (DTO 1126)
(ORB OPS, DTO 1126)
KU AVAIL 06:30 TO 07:00

ALF4CAL

ALF5DRY

ALF5DRY

07:00
AFT CONTROLLER C/O
(ORB OPS, GNC)

ORB
38

VIDEO TELECONFERENCE
(ORB OPS, DTO 1126) Steps 1-10

ME21XFER

ALF5DRY

06 JHF MODE - OFF
PRIVATE MEDICAL CONFERENCE
(ALL)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

08:00

KCA FILE XFER
(ORB OPS, DTO 1126)
Steps 1-3

(A1)B6
AUTO/VERN

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)
Change DAP B to B6
Config DAP: B/AUTO/VERN

ORB
39

TAG-UP

TAG-UP

09:00

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

10:00

INT
H
B
3
DEG
H2O
INT
H
B

STS-78 (FD 03)

CDR

PLT

STS

MCC

MET
DAY 002

10:00

ORB
40

(A1)B6
AUTO/VERN

11:00

ORB
41

12:00

13:00

ORB
42

14:00

ORB
43

15:00

16:00

ORB
44

17:00

ORB
45

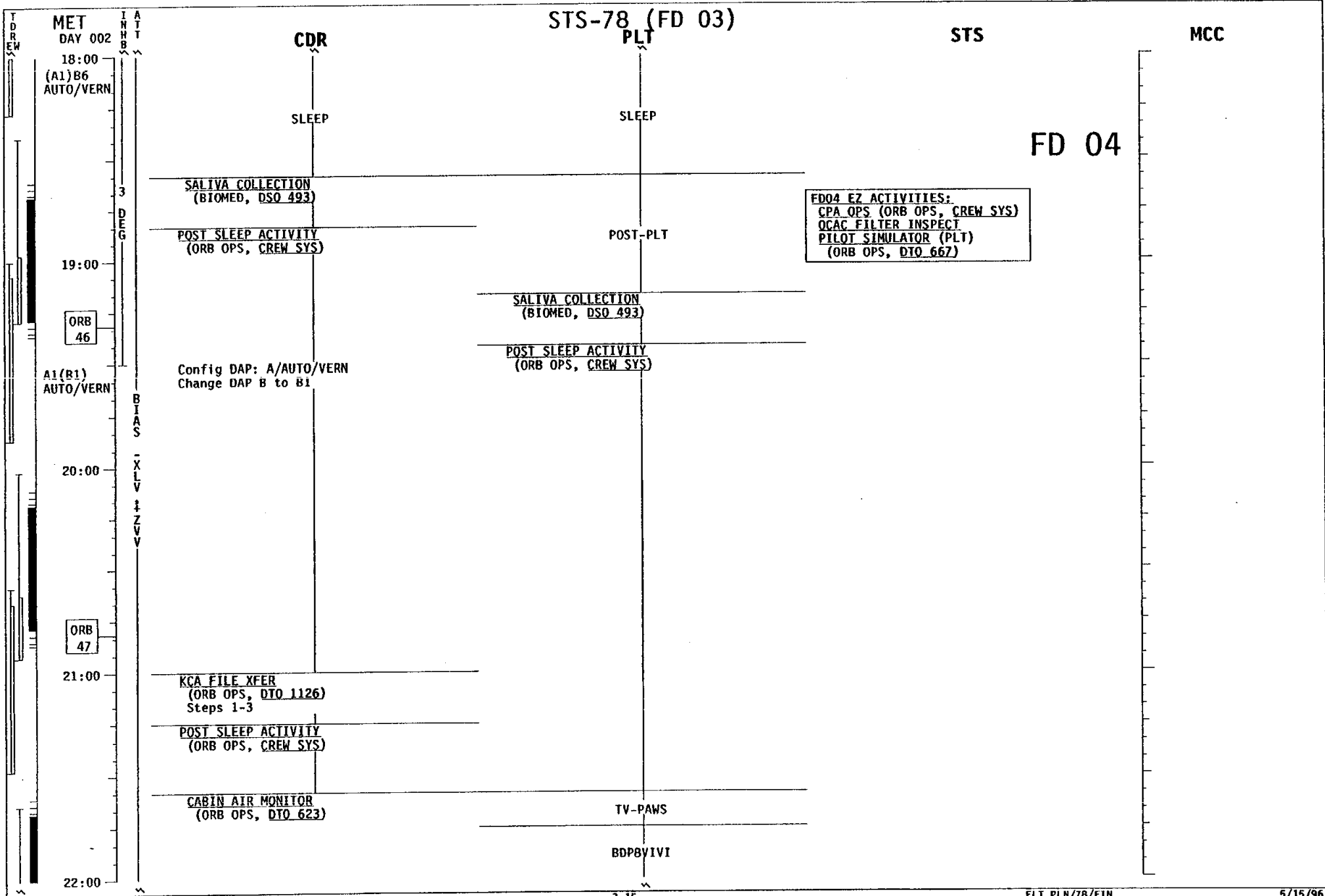
18:00

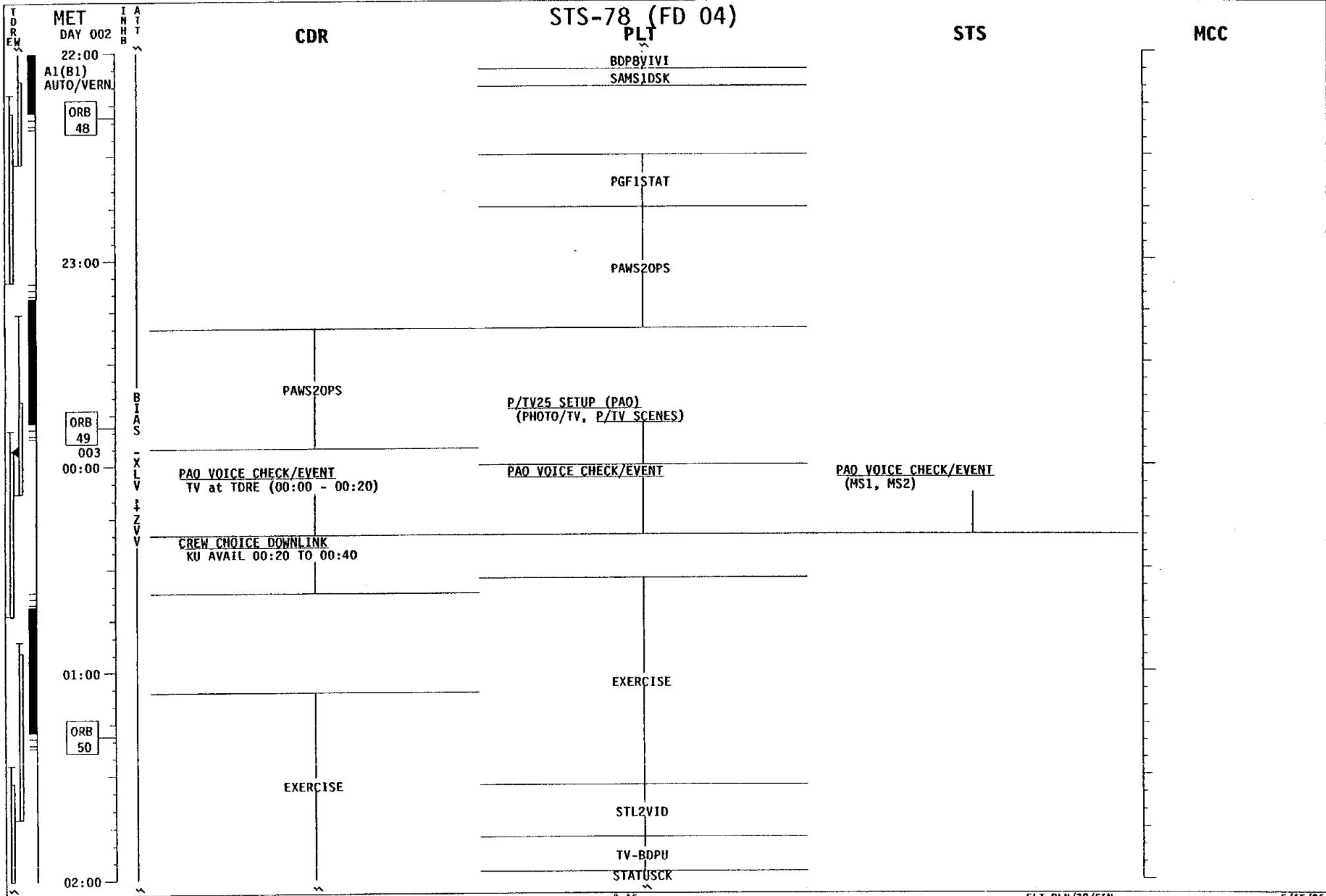
PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

SLEEP

SLEEP





T
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MET
DAY 003

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STS-78 (FD 04)

STS

MCC

02:00
A1(B1)
AUTO/VERN

CDR

PLT

EXERCISE

STATUSCK

ORB
51

MEAL

MEAL

03:00

AG5NASA2

TVD1PREP

SUPPLY/WASTE WATER DUMP
(ORB OPS, ECLS)
Initiate Simo Dump

POST SLEEP ACTIVITY
(ORB OPS, CREW SYS)

UPDATE
WASTE/SUPPLY
H2O DUMP QTY

04:00

ORB
52

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

VOICE OPS (MS2)
(PL OPS, SAREX)
RISE=04:42 SET=04:50
W1, CONTACT E4
Eisenhower Middle School
San Antonio, Tx

05:00

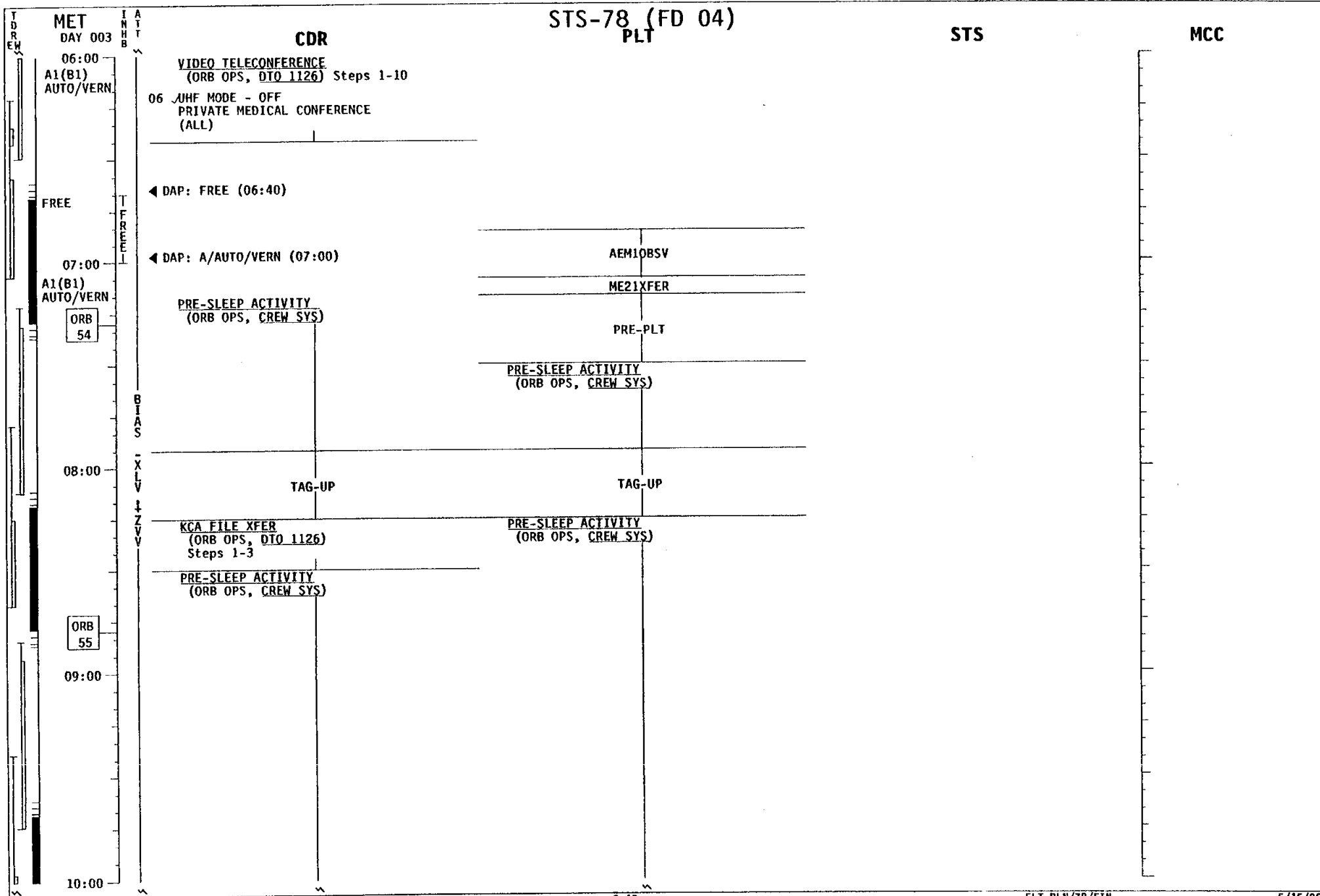
KCA CHALKBOARD (DTO 1126)
(ORB OPS, DTO 1126)
KU AVAIL 04:55 TO 05:25

ORB
53

SUPPLY/WASTE WATER DUMP
(ORB OPS, ECLS)
Terminate Simo Dump

06:00

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STS-78 (FD 04)
PLT

STS

MCC

CDR

VIDEO TELECONFERENCE
(ORB OPS, DTO 1126) Steps 1-10

06 JHF MODE - OFF
PRIVATE MEDICAL CONFERENCE
(ALL)

◀ DAP: FREE (06:40)

◀ DAP: A/AUTO/VERN (07:00)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

AEM1OBSV

ME21XFER

PRE-PLT

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

TAG-UP

TAG-UP

KCA FILE XFER
(ORB OPS, DTO 1126)
Steps 1-3

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

STS-78 (FD 04)
PLT

CDR

STS

MCC

MET
DAY 003

INT
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PRE-SLEEP ACTIVITY

PRE-SLEEP ACTIVITY

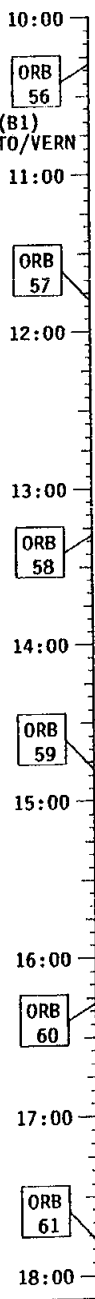
SLEEP

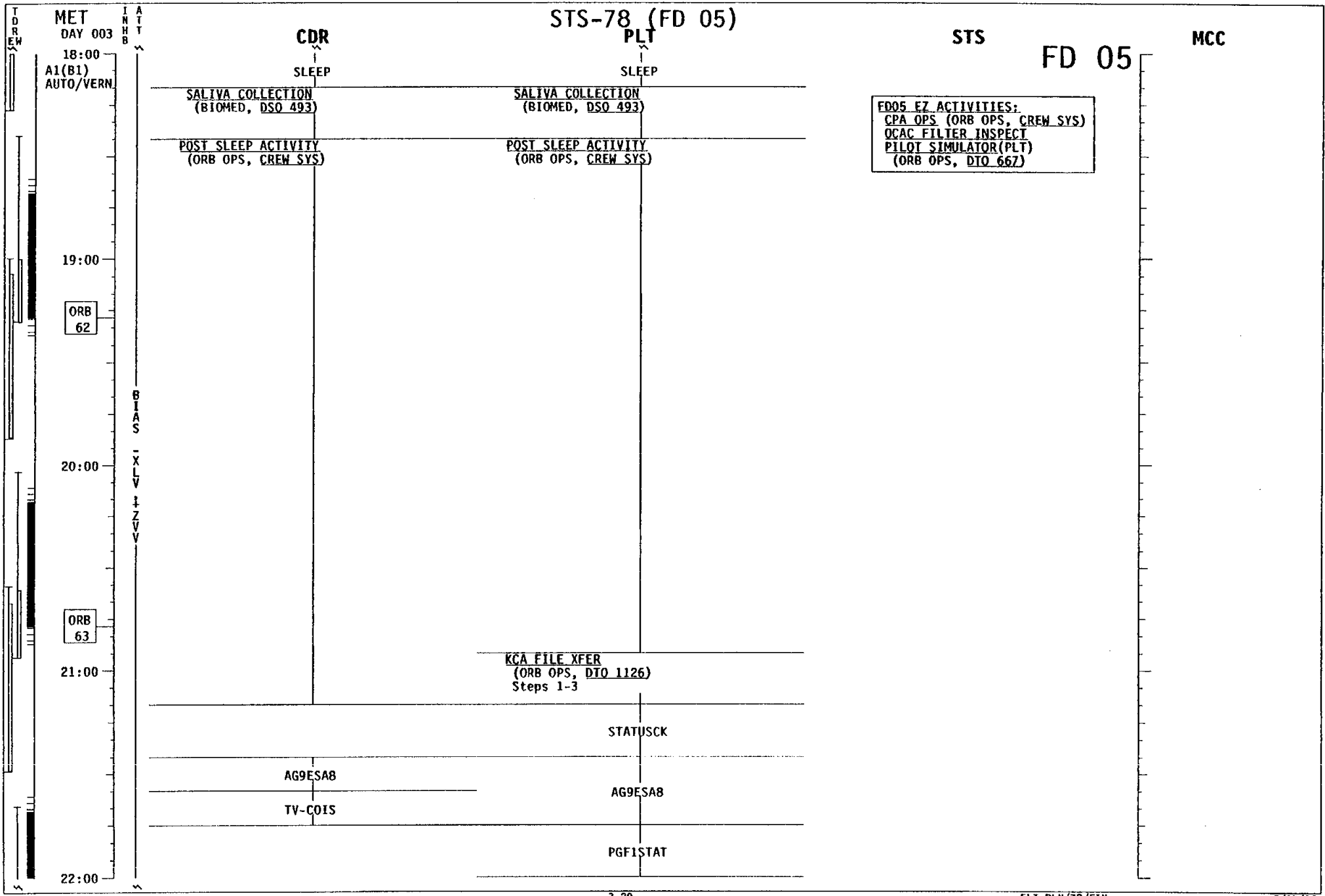
SLEEP

BIAS
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A1 (B1)
AUTO/VERN

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MET
DAY 003

A
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STS-78 (FD 05) PLT

STS

MCC

22:00

A1(B1)
AUTO/VERN.

ORB
64

AG9ESA8

BDP9LEGR

23:00

EXERCISE

VOICE OPS (MS3 PERSONAL) VG5AGR
(PL OPS, SAREX)
RISE=23:22 SET=23:30
WL CONTACT P5

ORB
65

004
00:00

B
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A
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X
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V
V

FILTER CLEANING
(IFM, SCHEDULED MAINTENANCE)
Inspect filters and clean
as necessary

JMCS Hose Block Filter for debris

EXERCISE

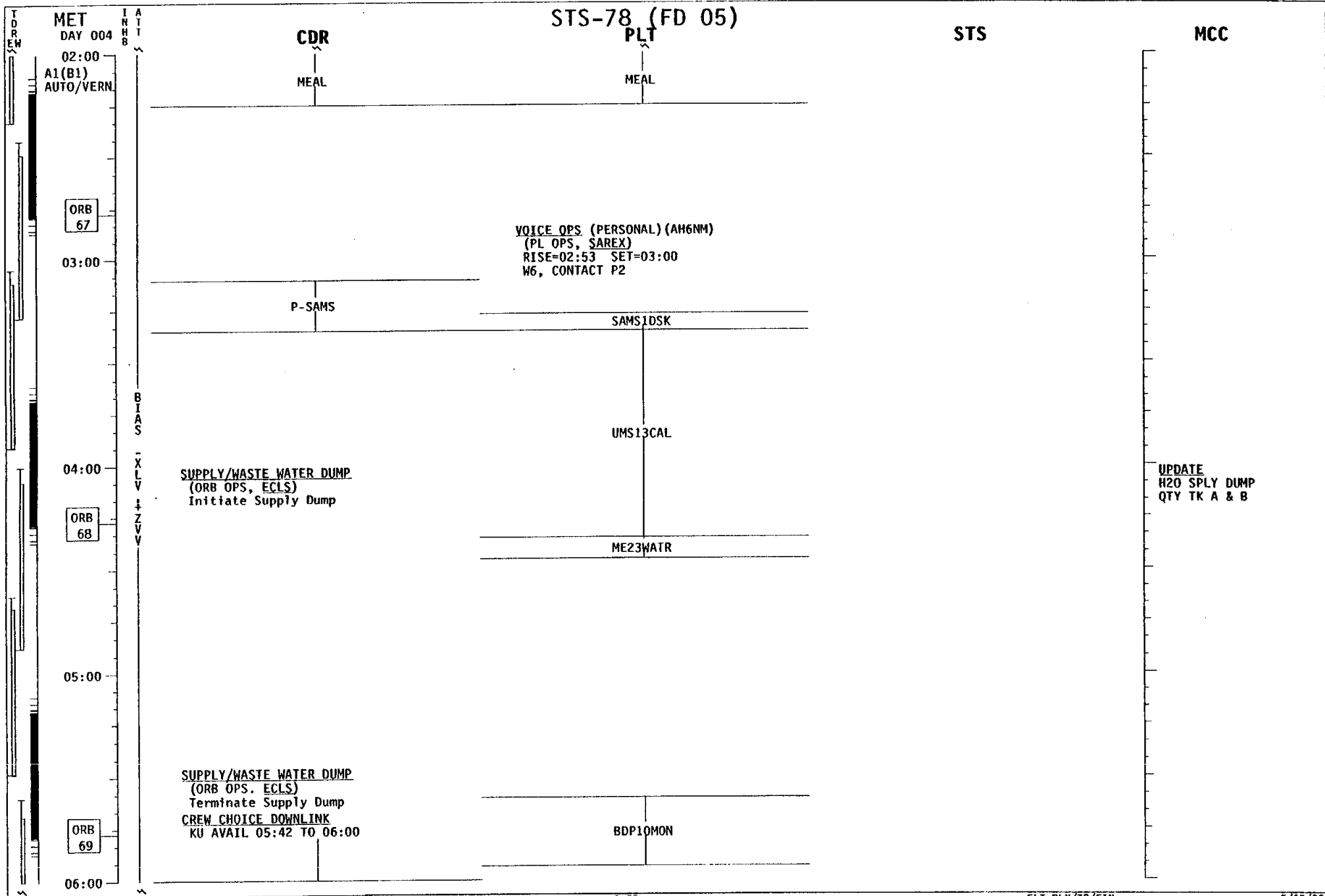
01:00

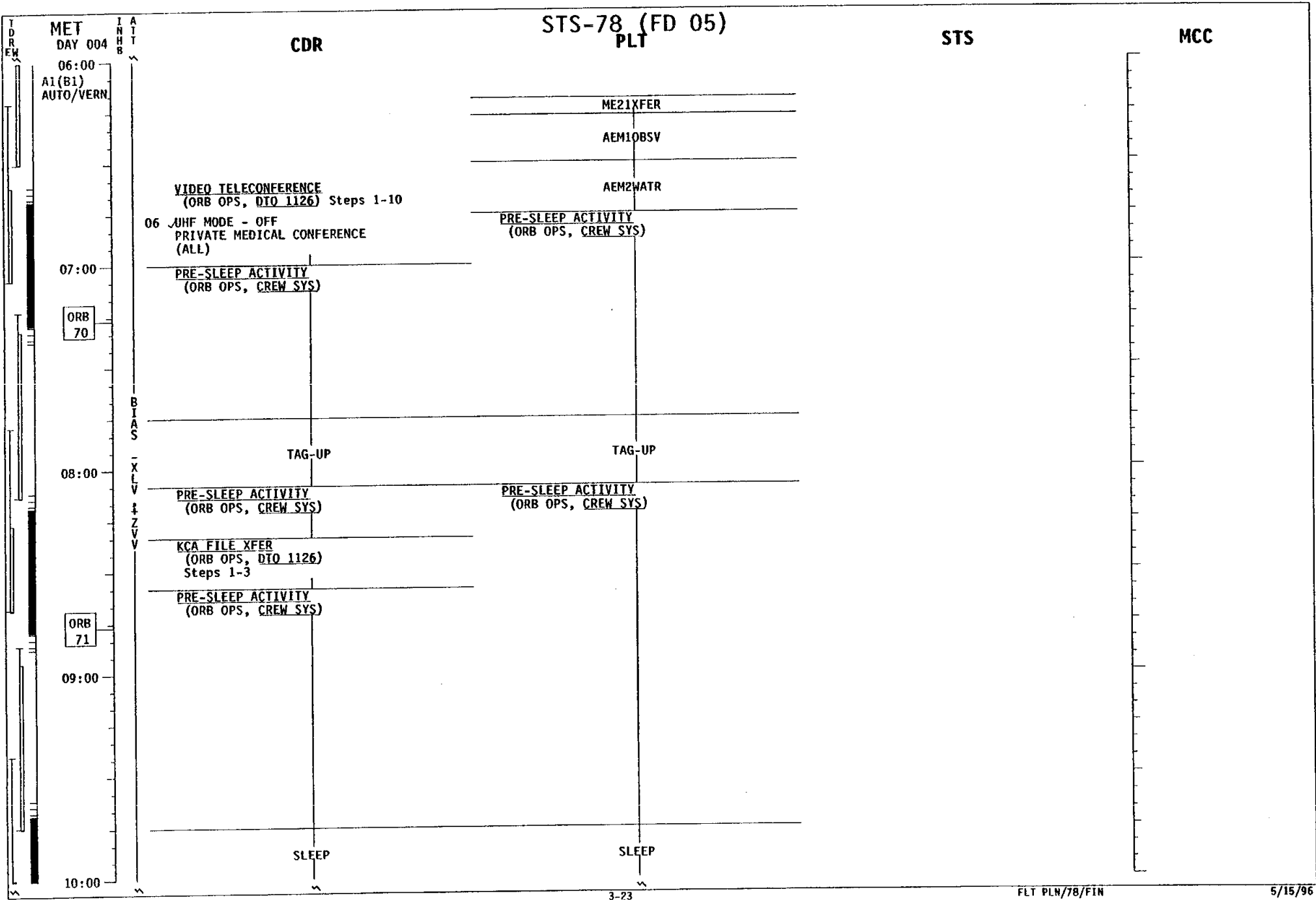
ORB
66

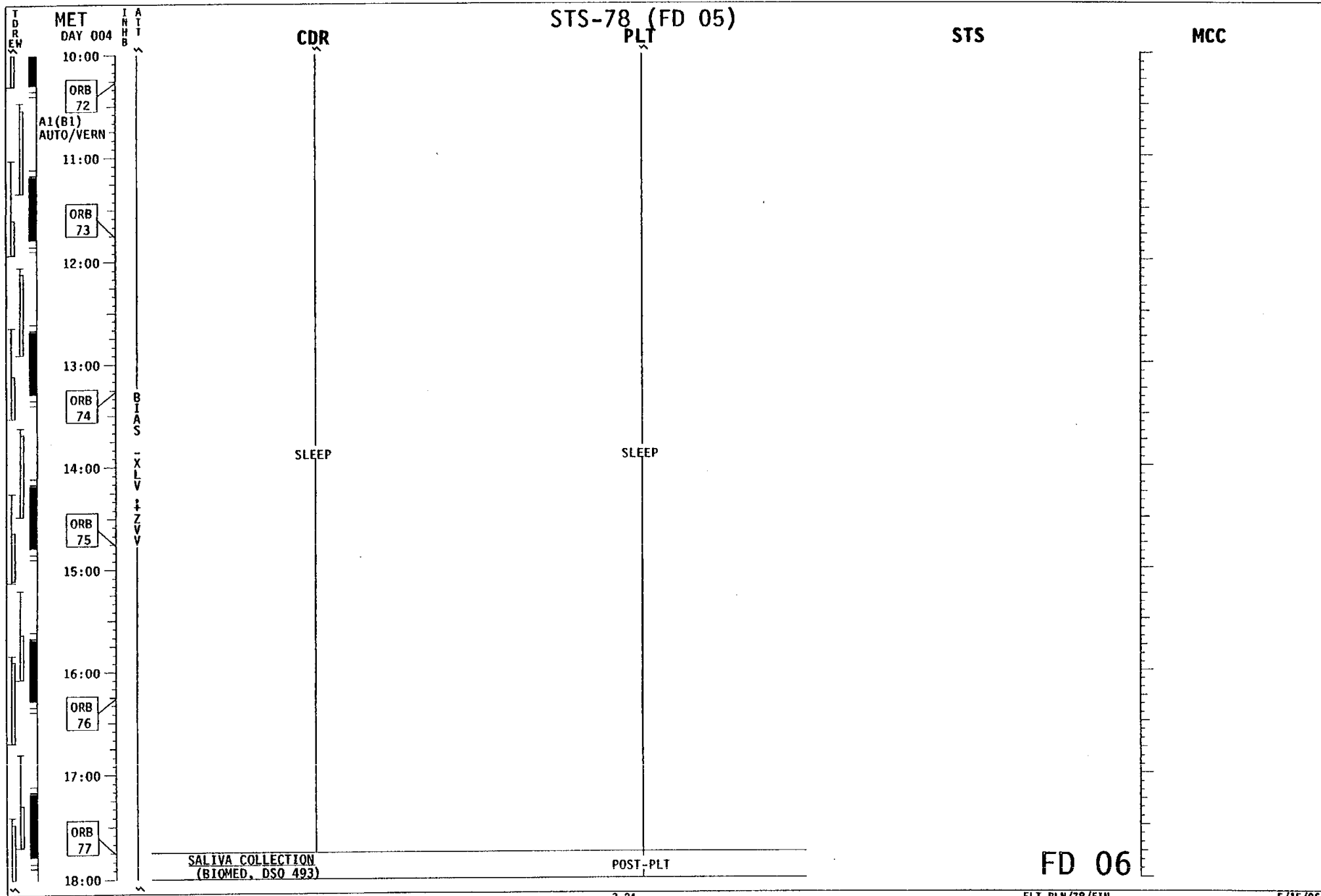
MEAL

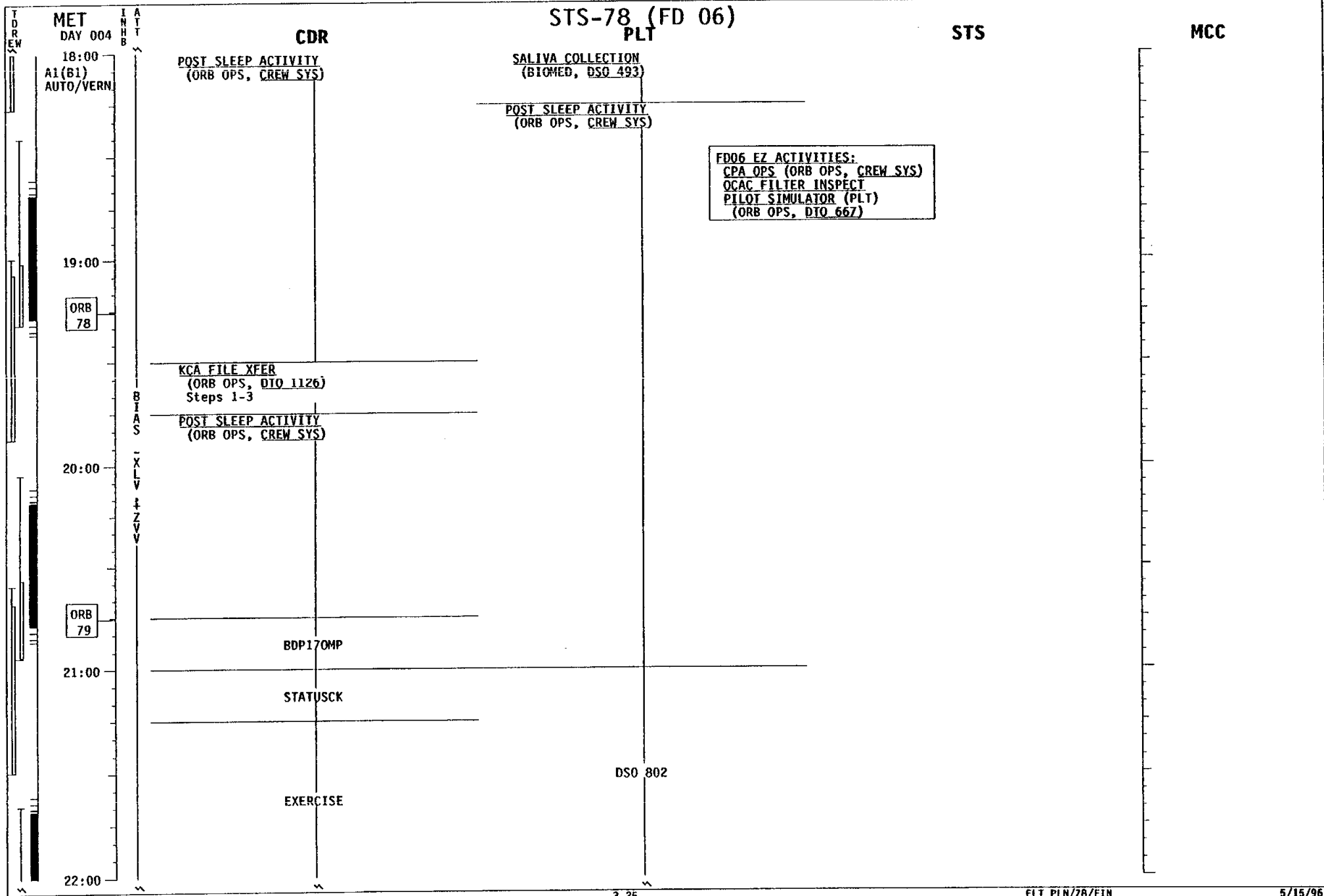
MEAL

02:00









STS-78 (FD 06)

STS

MCC

I D R E W
 MET
 DAY 004
 22:00
 A1(B1)
 AUTO/VERN
 ORB
 80
 23:00
 ORB
 81
 005
 00:00
 ORB
 82
 01:00
 02:00

A T T
 I N H B
 B I A S
 - X L V
 † Z V V

CDR

PLT

EXERCISE

VOICE OPS
 (PL OPS, SAREX)
 RISE=22:23 SET=22:30
 W1, CONTACT E5
 Heritage Middle School, Colleyville, TX

BDP17OMP

BDP14MAG

DSO 802

SUPPLY/WASTE WATER DUMP
 (ORB OPS, ECLS)
 Initiate Supply Dump
 CABIN AIR MONITOR
 (ORB OPS, DTO 623)

CONDENSATE TANK DUMP
 (SLM OPS, ECLSS)

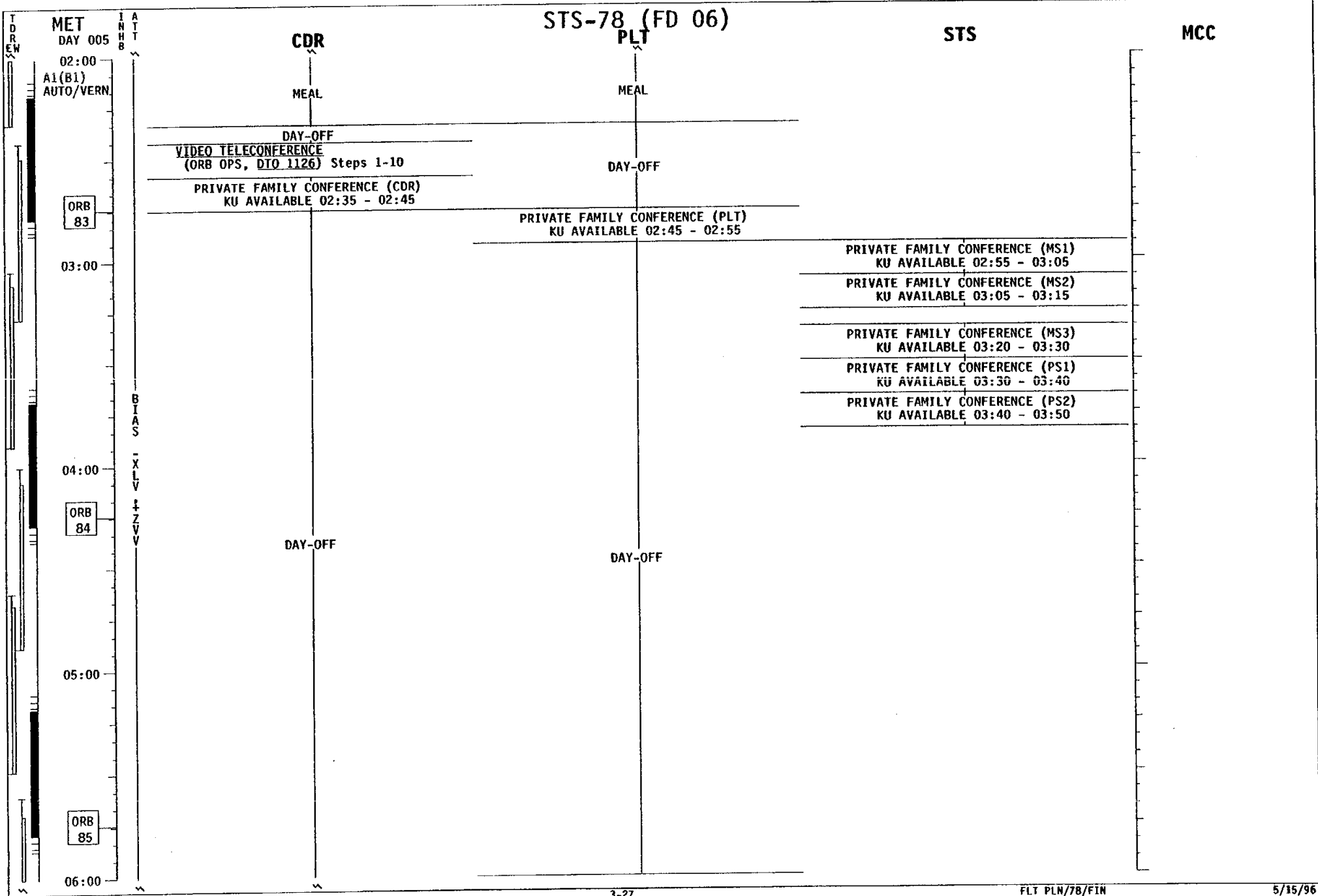
UPDATE
 H2O SPLY DUMP
 QTY TK A & B

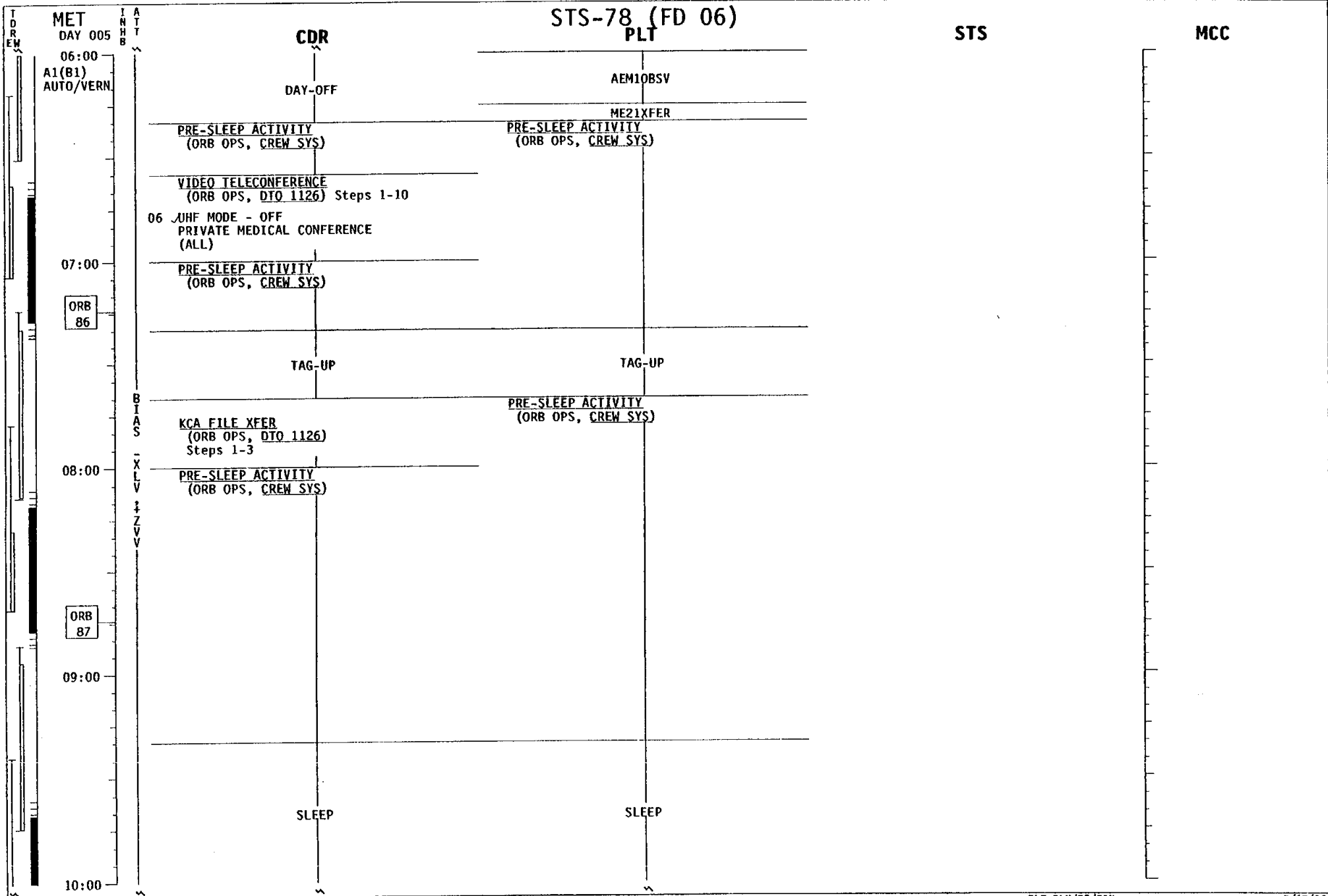
SUPPLY/WASTE WATER DUMP
 (ORB OPS, ECLS)
 Terminate Supply Dump

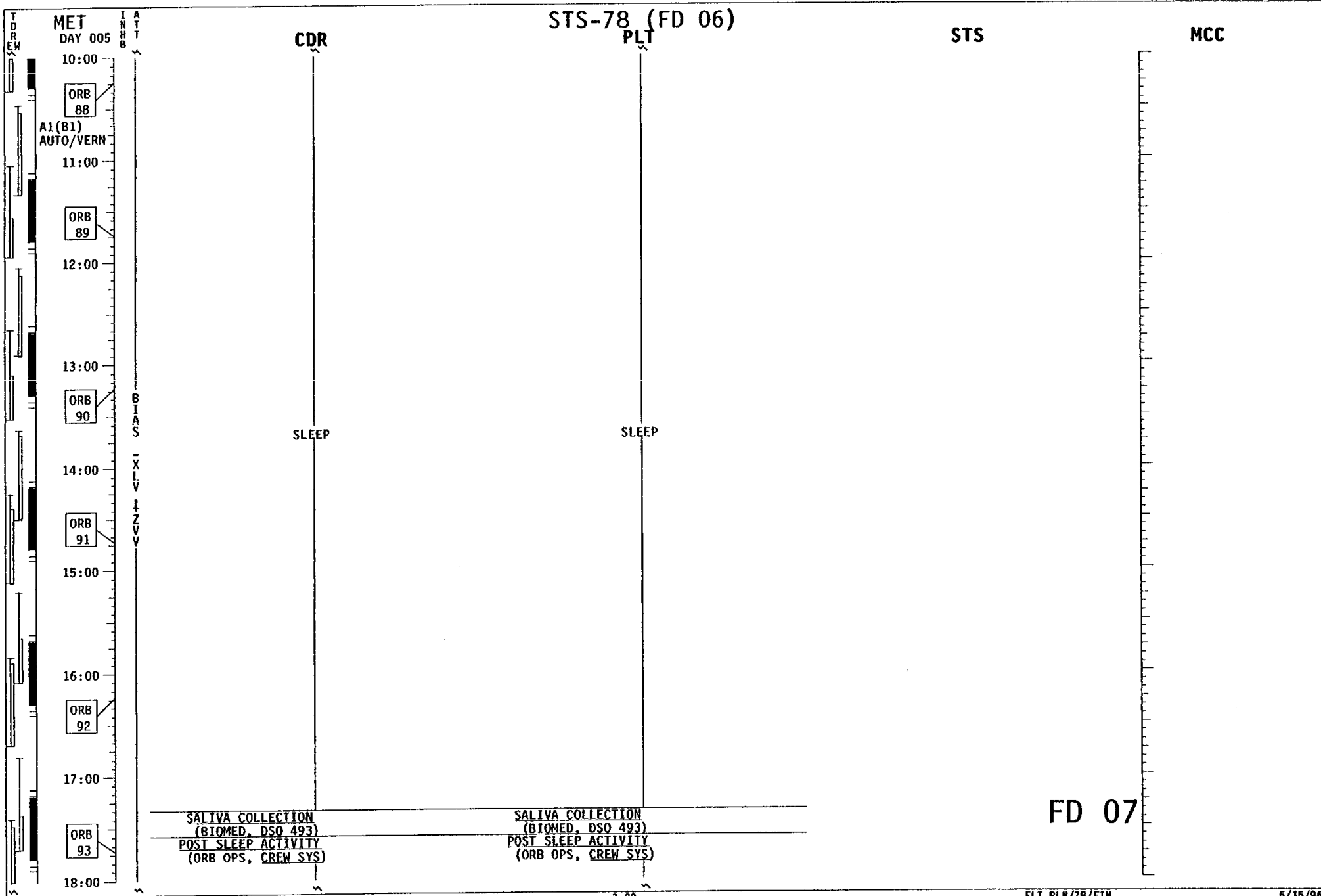
DAY-OFF

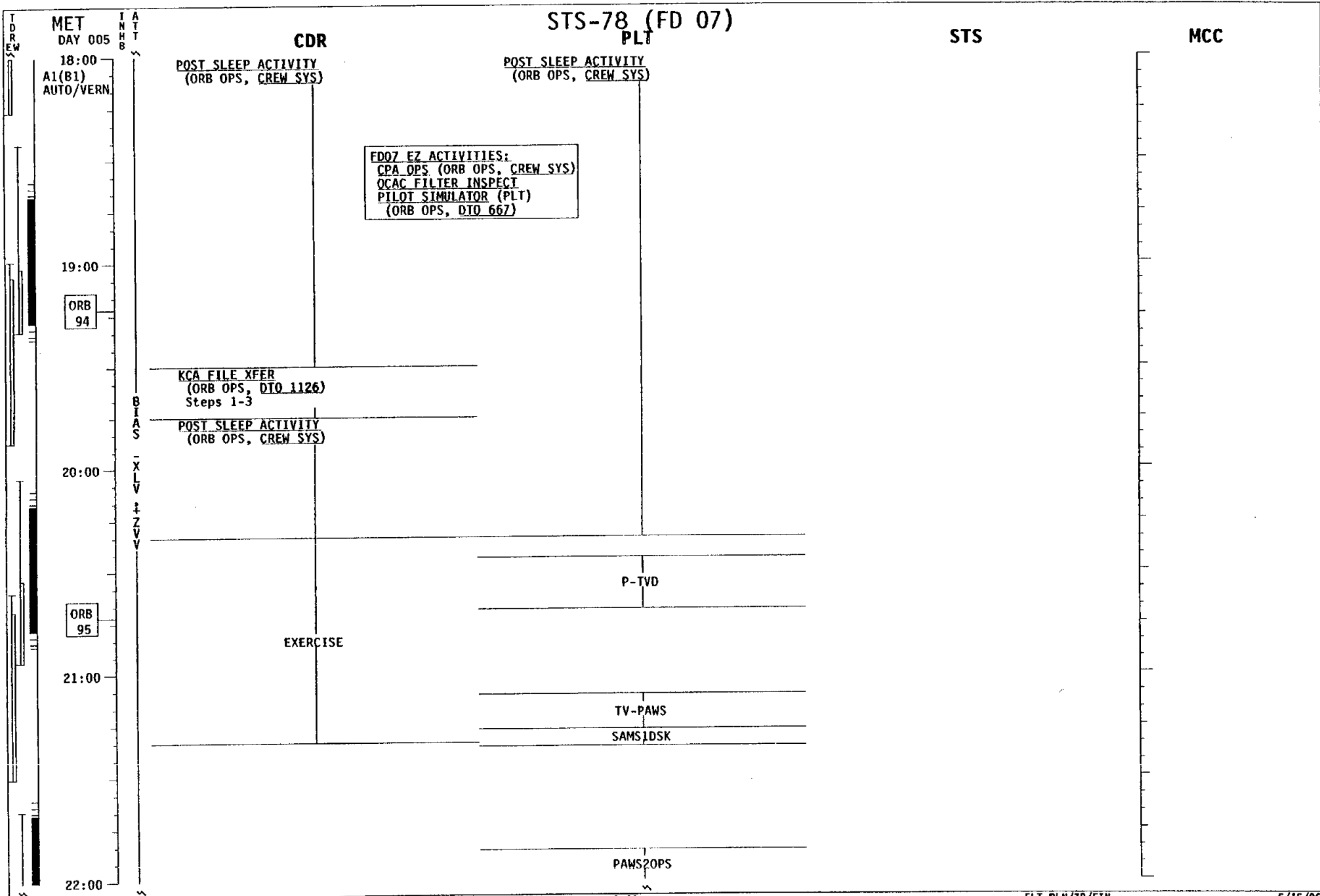
MEAL

MEAL









STS-78 (FD 07)

CDR

PLT

STS

MCC

MET DAY 005

22:00

ORB 96

A1(B1)
AUTO/VERN

23:00

ORB 97

006
00:00

VOICE OPS
(PL OPS, SAREX)
RISE=00:01 SET=00:09
W1, CONTACT E2
Bethlehem Central, Delmar, NY

01:00

ORB 98

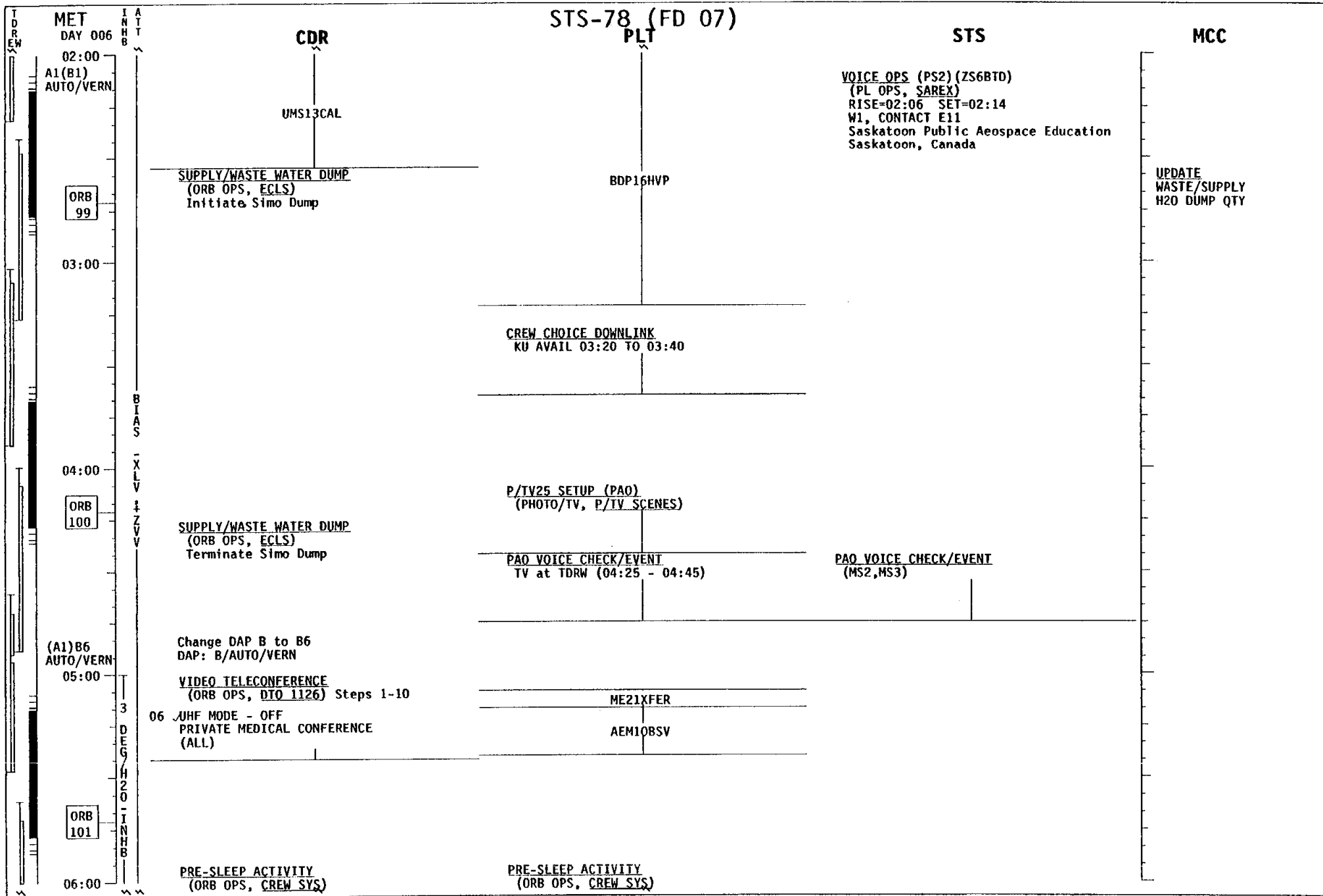
P-PGF

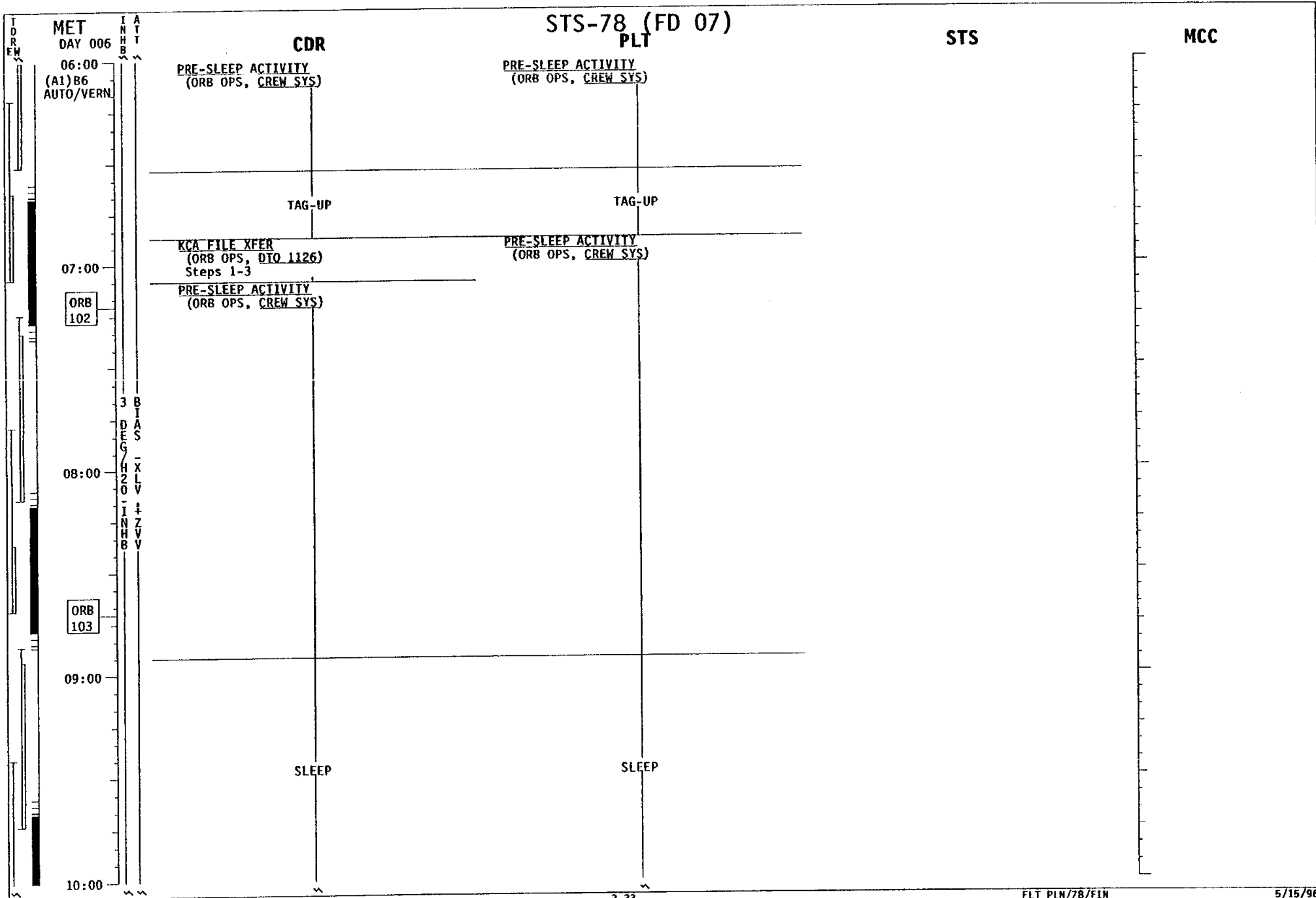
PGF1STAT

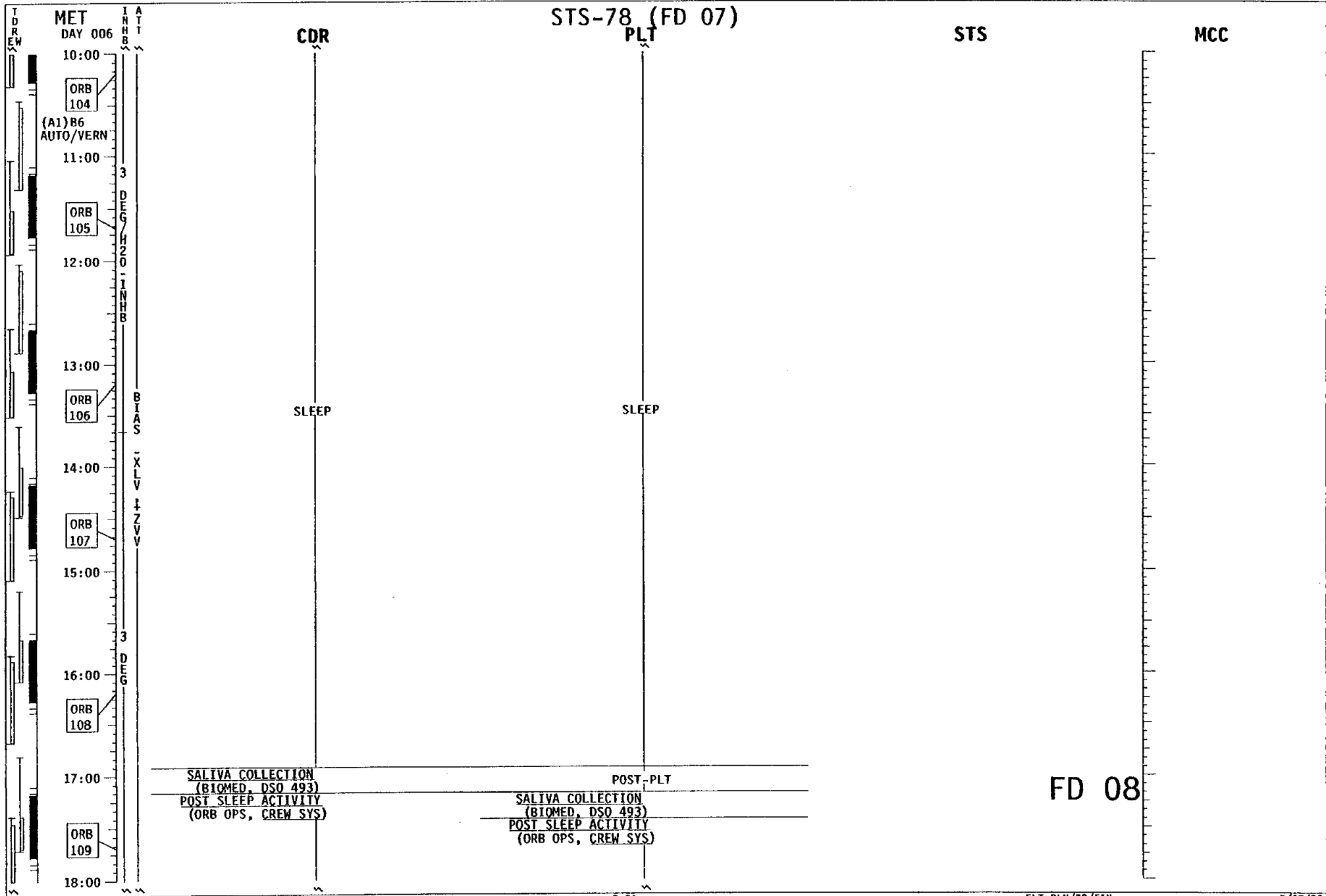
UMS13CAL

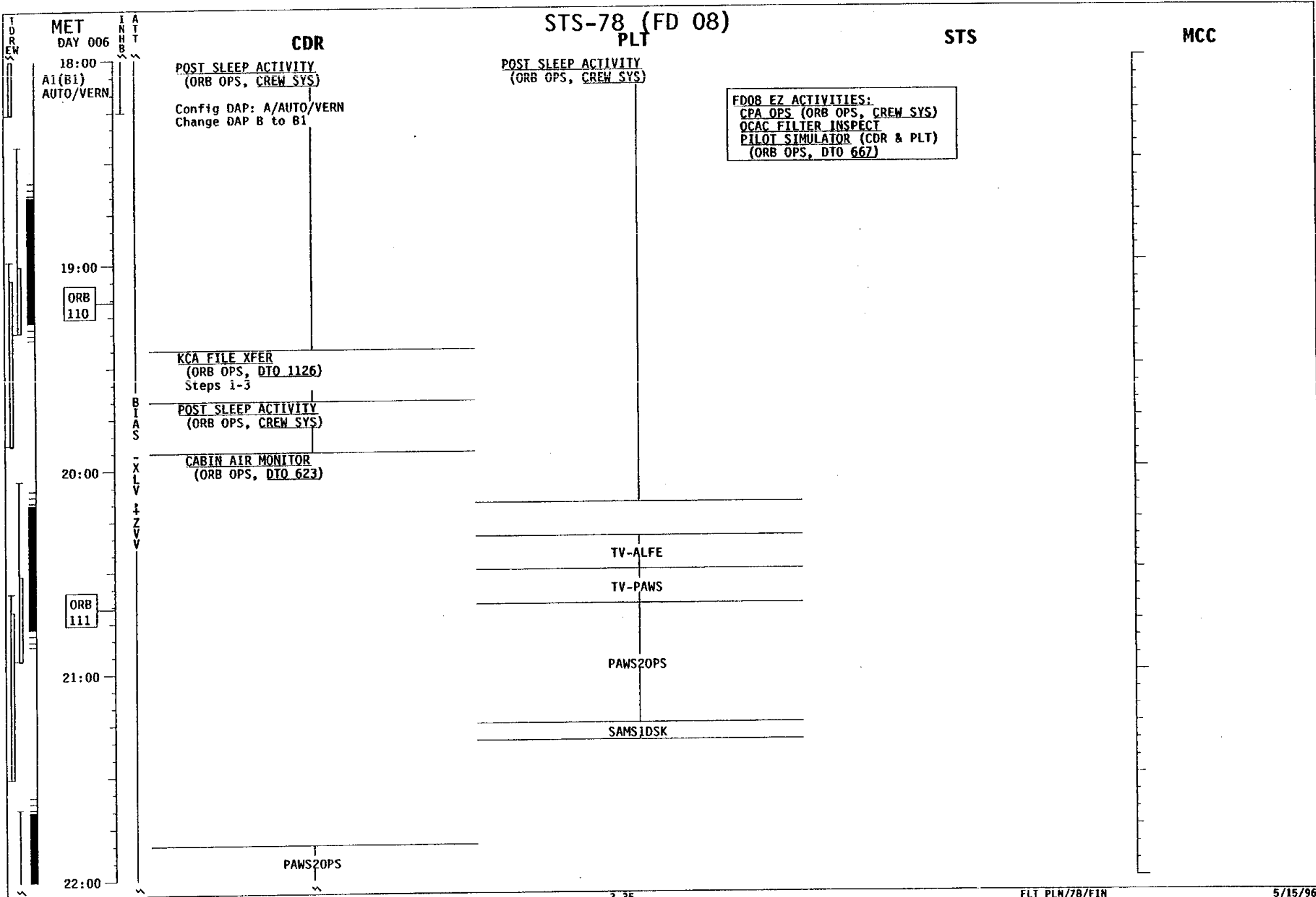
BDP16HVP

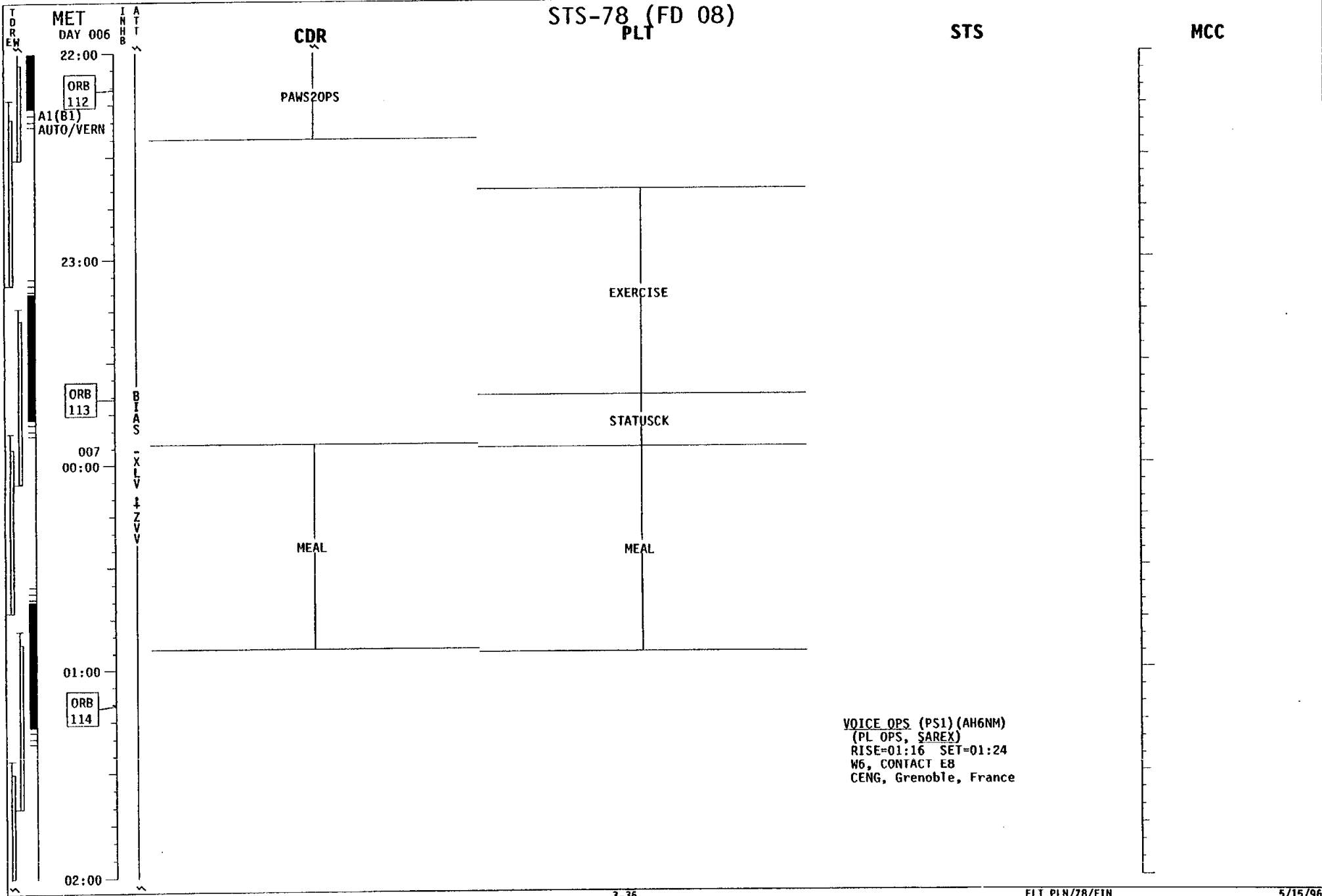
02:00

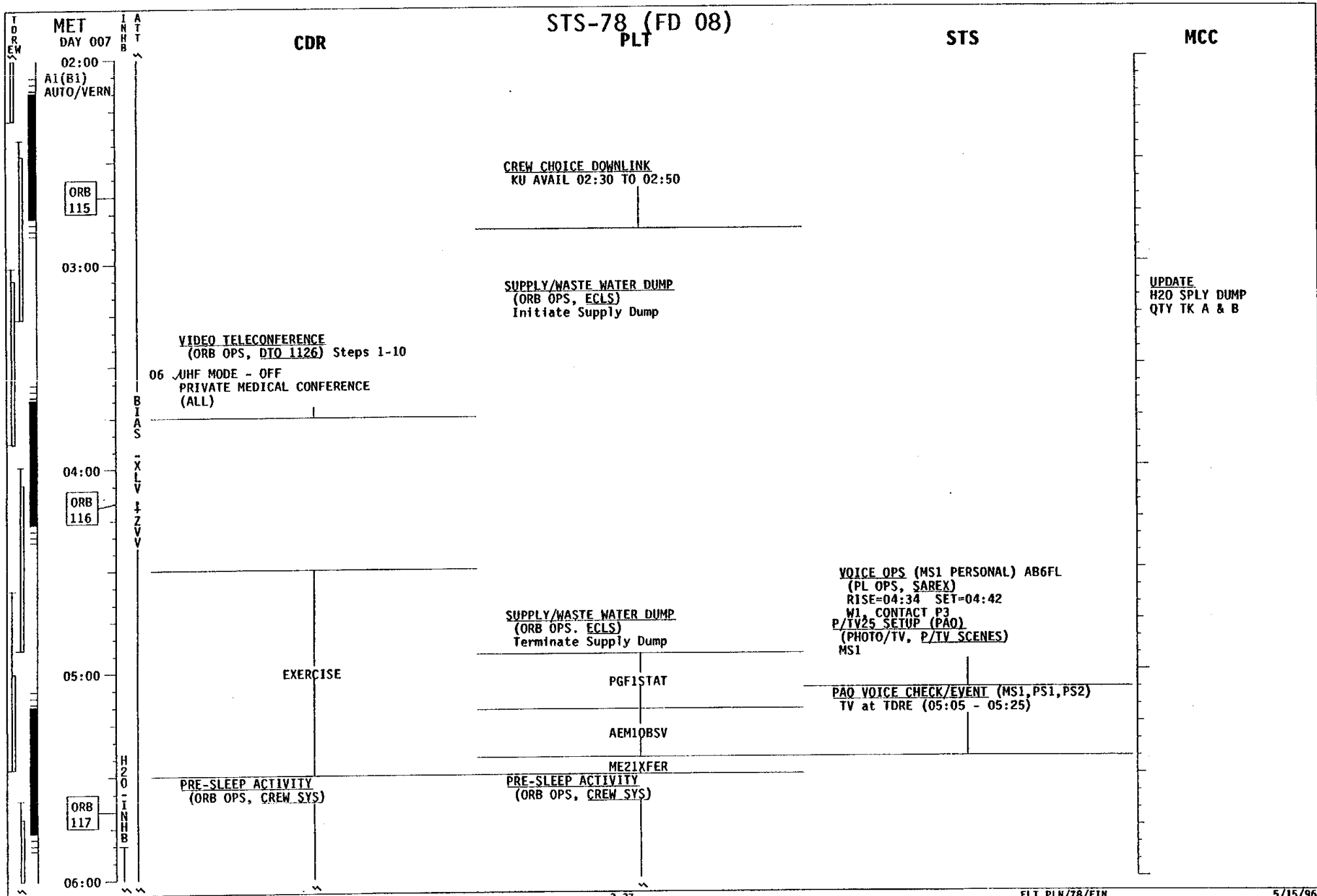


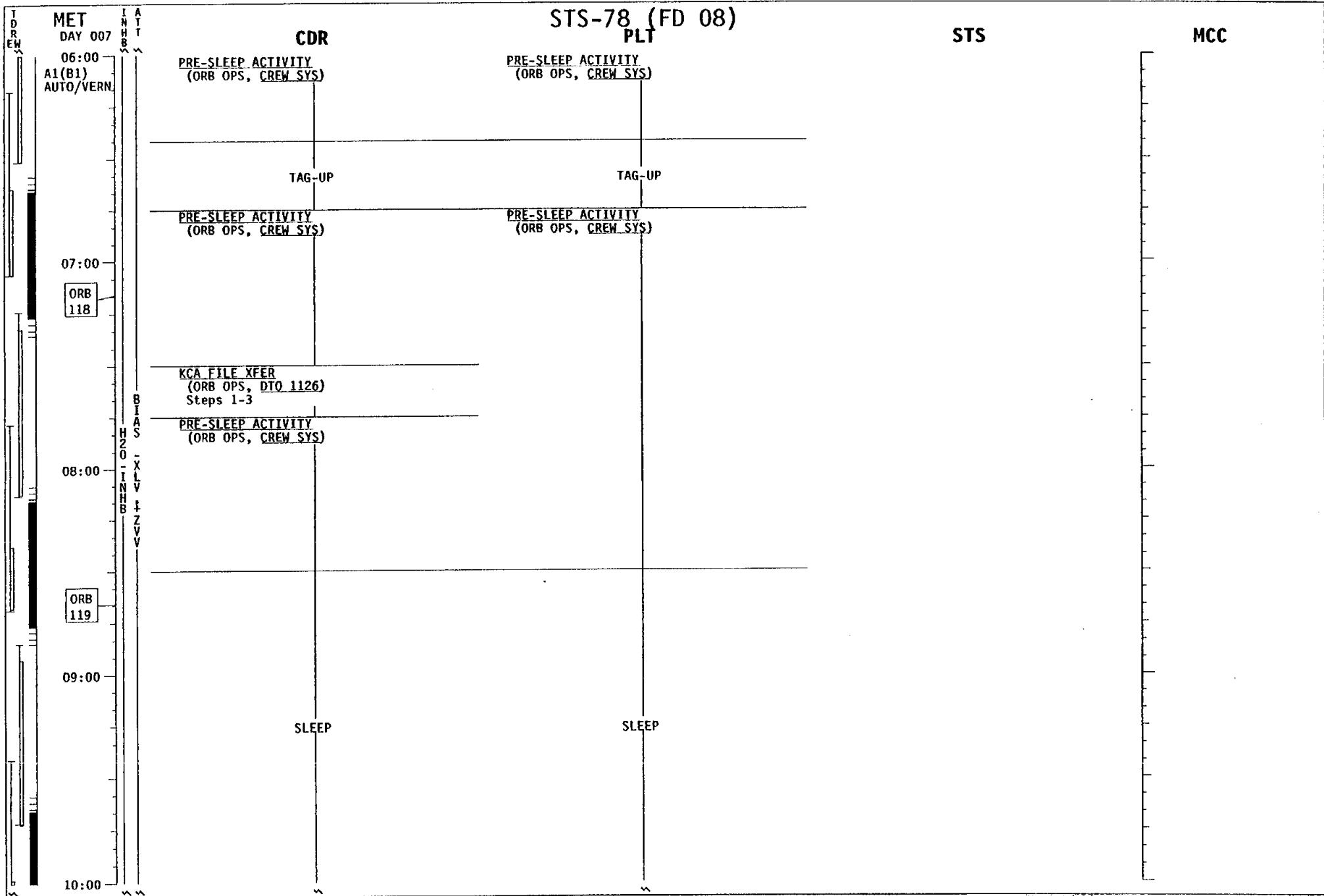












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DAY 007

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STS-78 (FD 08)

STS

MCC

CDR

PLT

A1(B1)
AUTO/VERN

10:00

ORB
120

11:00

ORB
121

12:00

13:00

ORB
122

14:00

ORB
123

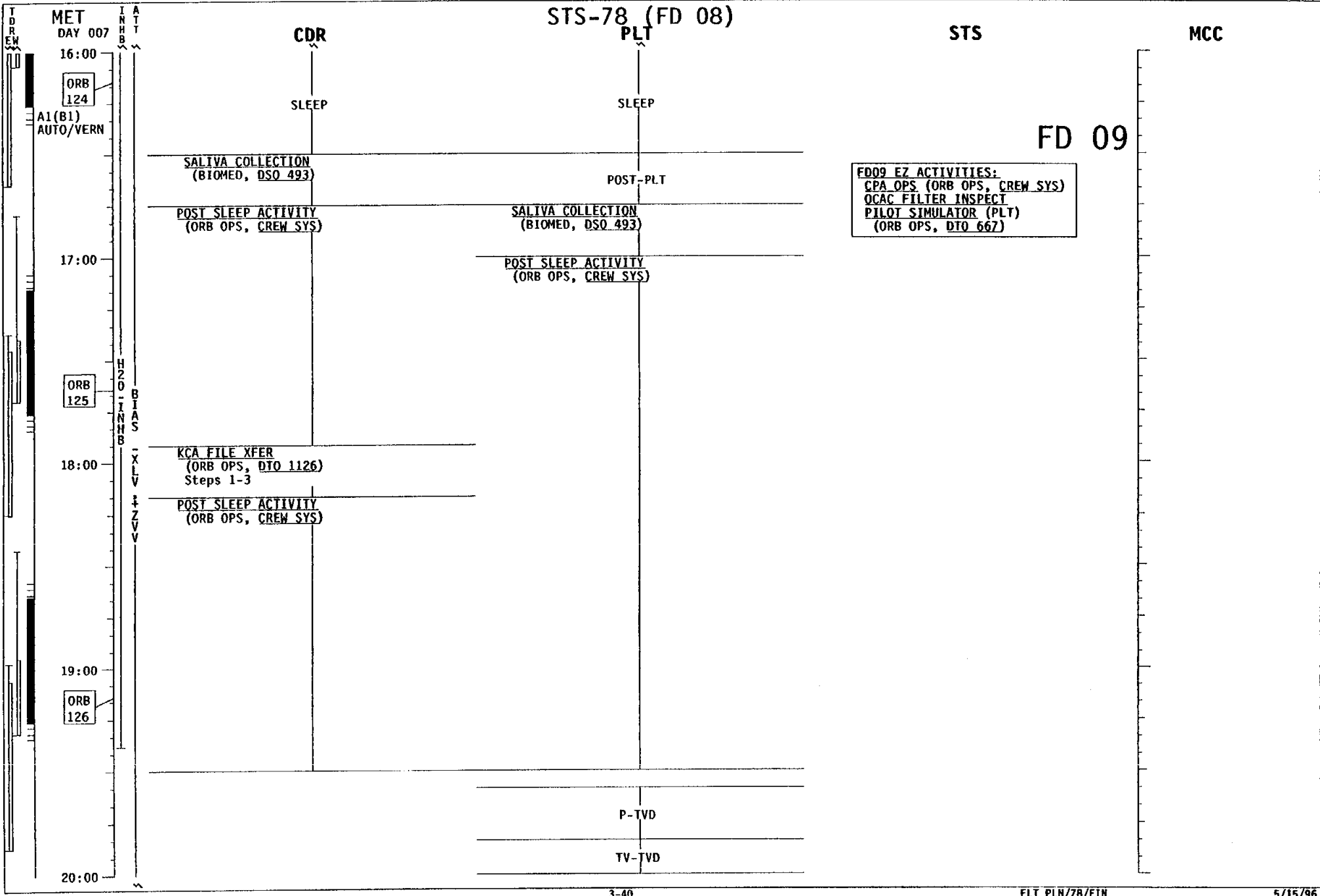
15:00

16:00

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X
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0
-
I
N
H
B

SLEEP

SLEEP



TDR
EW

MET
DAY 007

INT
B

STS-78 (FD 09) PLT

STS

MCC

20:00

A1(B1)
AUTO/VERN

ORB
127

21:00

22:00

ORB
128

23:00

ORB
129

008

00:00

B I A S
- X L V
+ Z V V

CDR

P/TV25 SETUP (PAO)
(PHOTO/TV, P/TV SCENES)

PAO VOICE CHECK/EVENT
TV at TDRE (20:45 - 21:05)

FILTER CLEANING
(IFM, SCHEDULED MAINTENANCE)
Inspect filters and clean
as necessary

EXERCISE

MEAL

AG4ESA7

STATUSCK

EXERCISE

POST SLEEP ACTIVITY
(ORB OPS, CREW SYS)

TV-PAWS

STL2VID

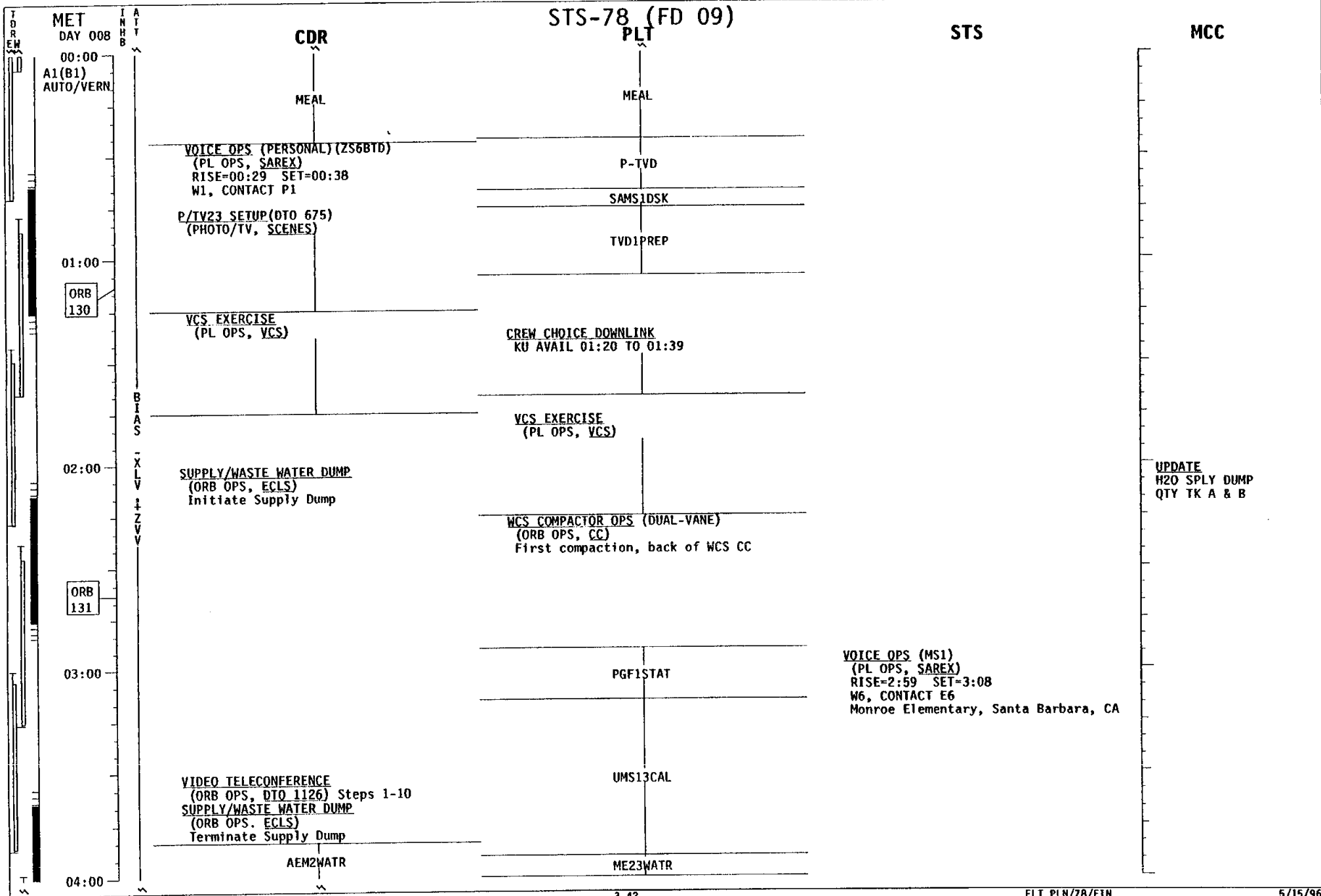
STL2VID

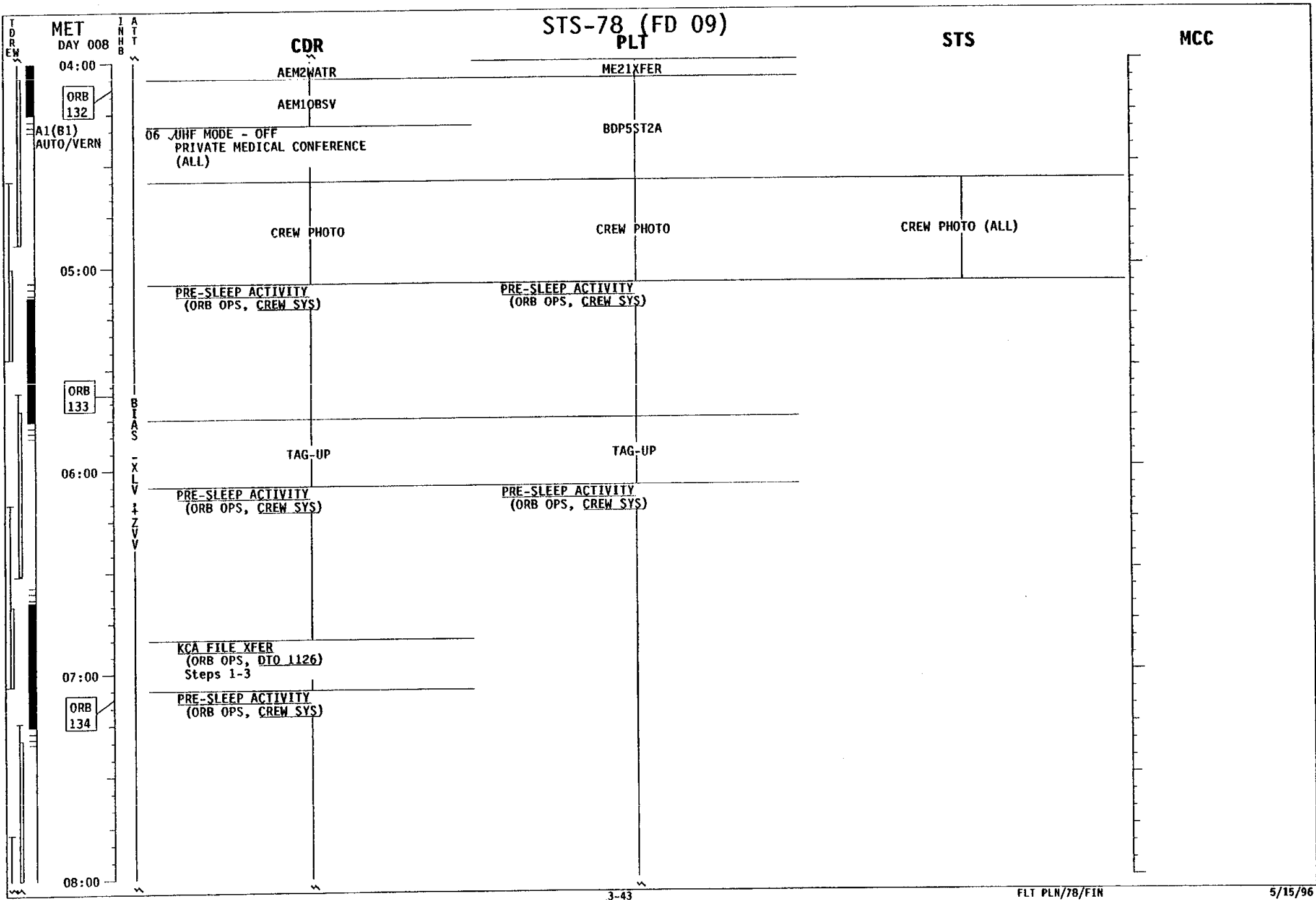
AG4ESA7

MEAL

VOICE OPS (PS2)
(PL OPS, SAREX)
RISE=20:11 SET=20:19
W1, CONTACT E3
Eltham Ladies College
Eltham Victoria, Australia

PAO VOICE CHECK/EVENT
(MS1,MS2,MS3)





STS-78 (FD 09)

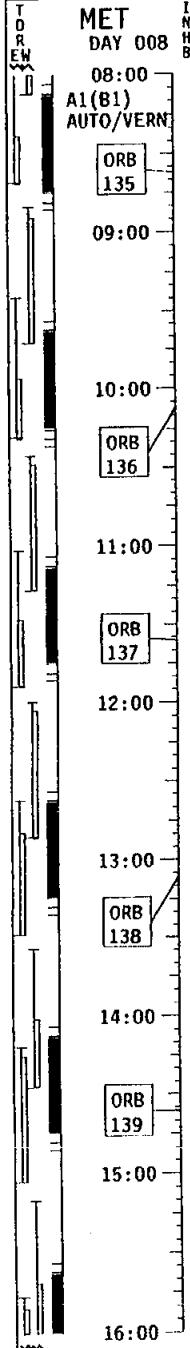
MET
DAY 008

CDR

PLT

STS

MCC

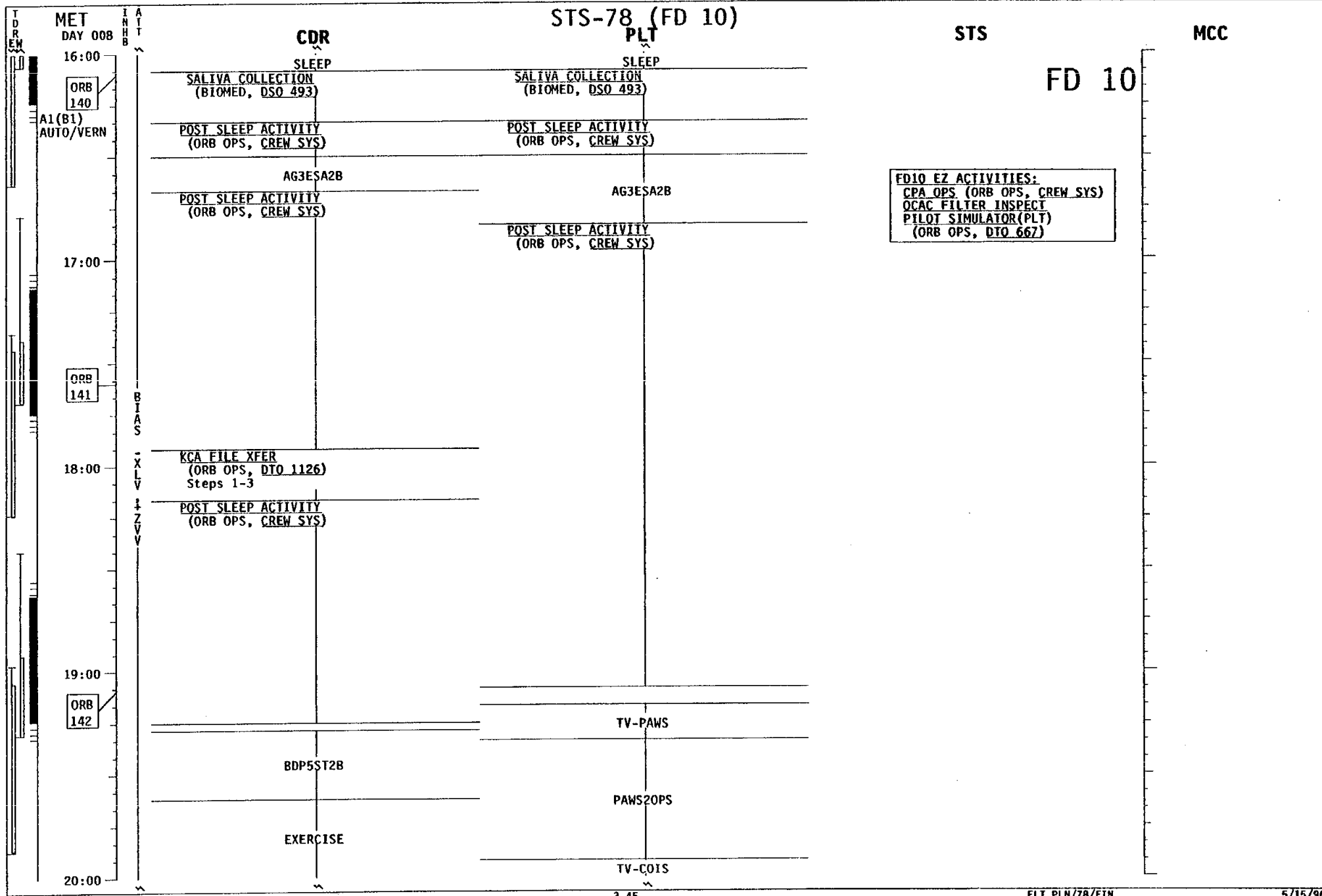


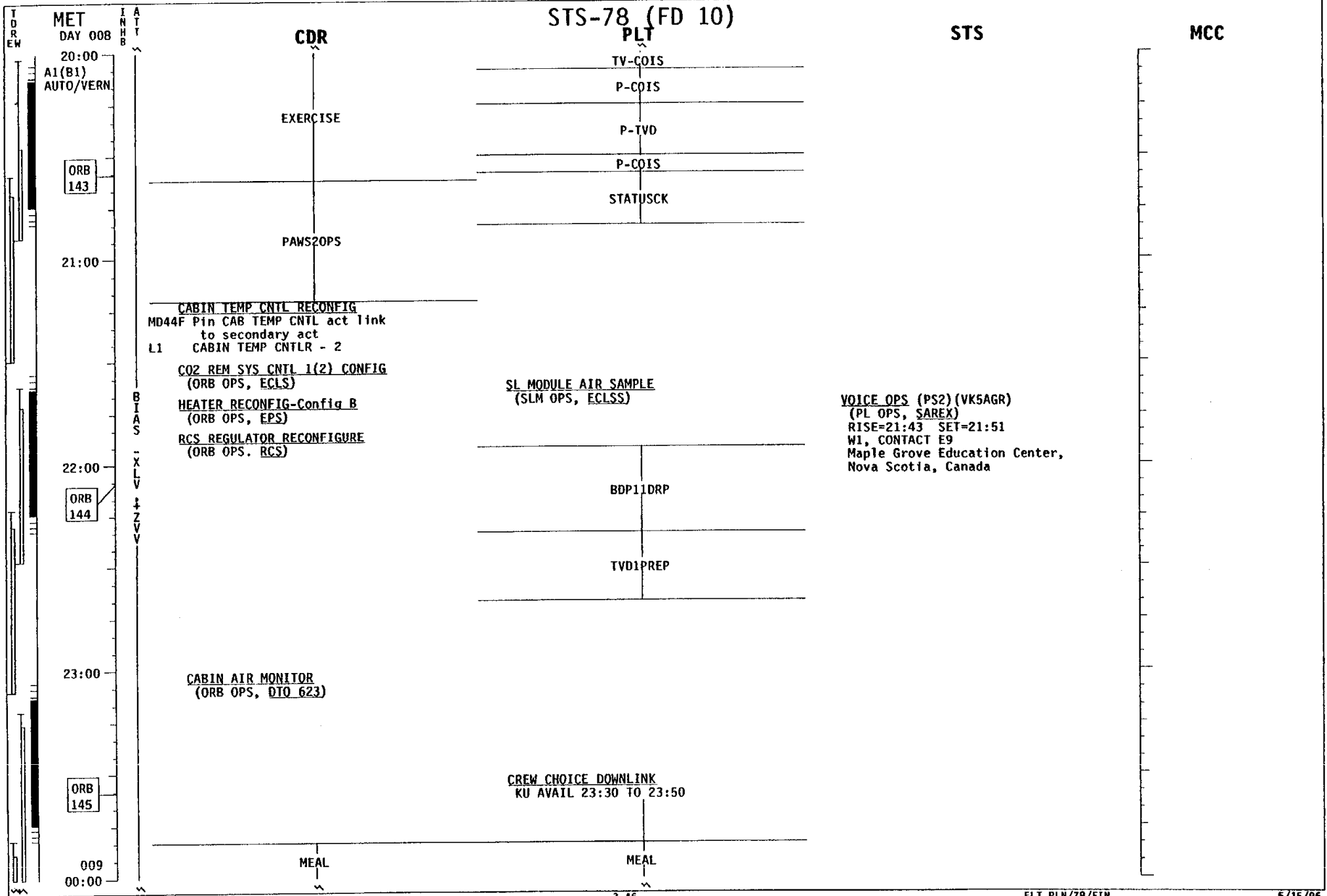
PRE-SLEEP ACTIVITY

PRE-SLEEP ACTIVITY

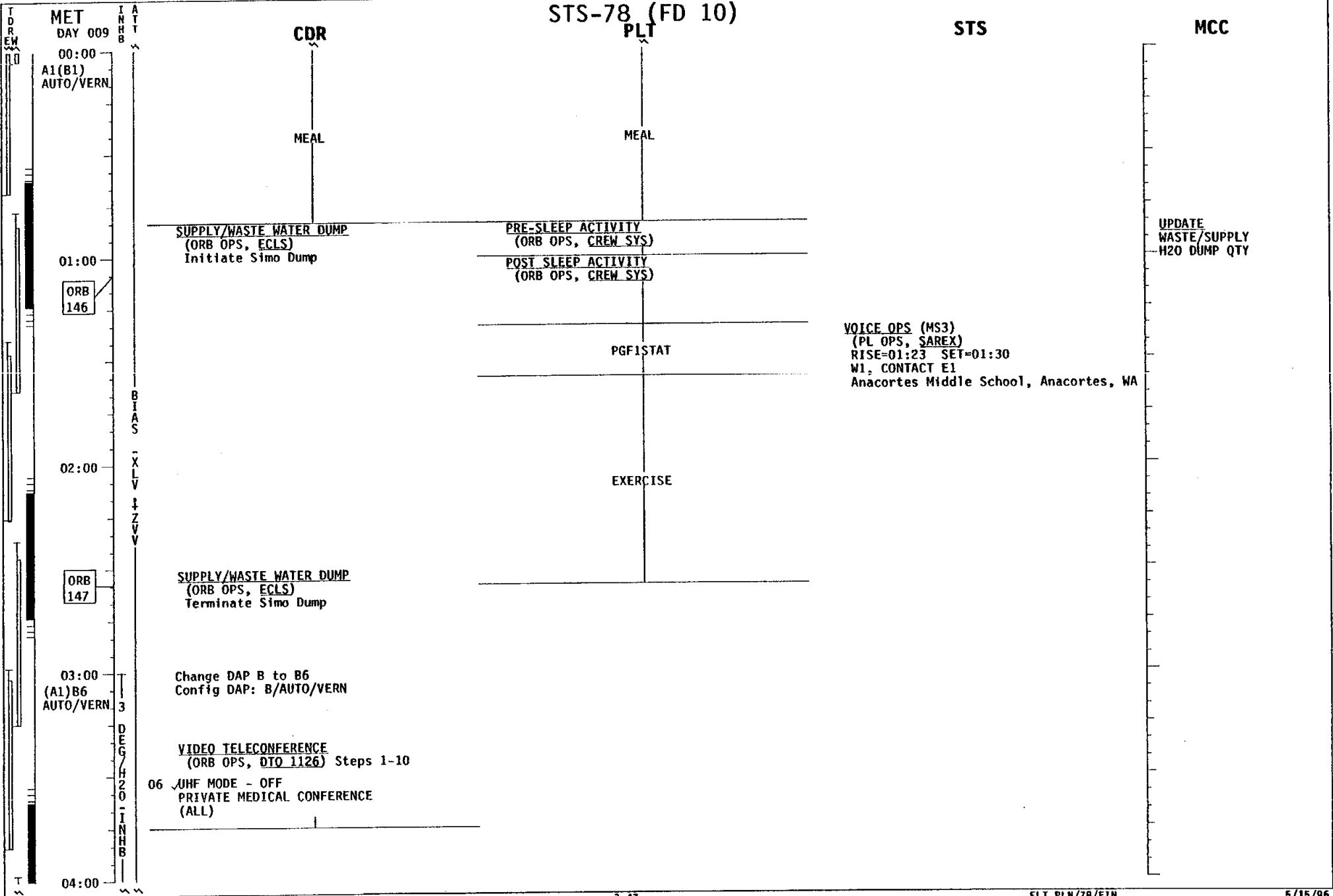
SLEEP

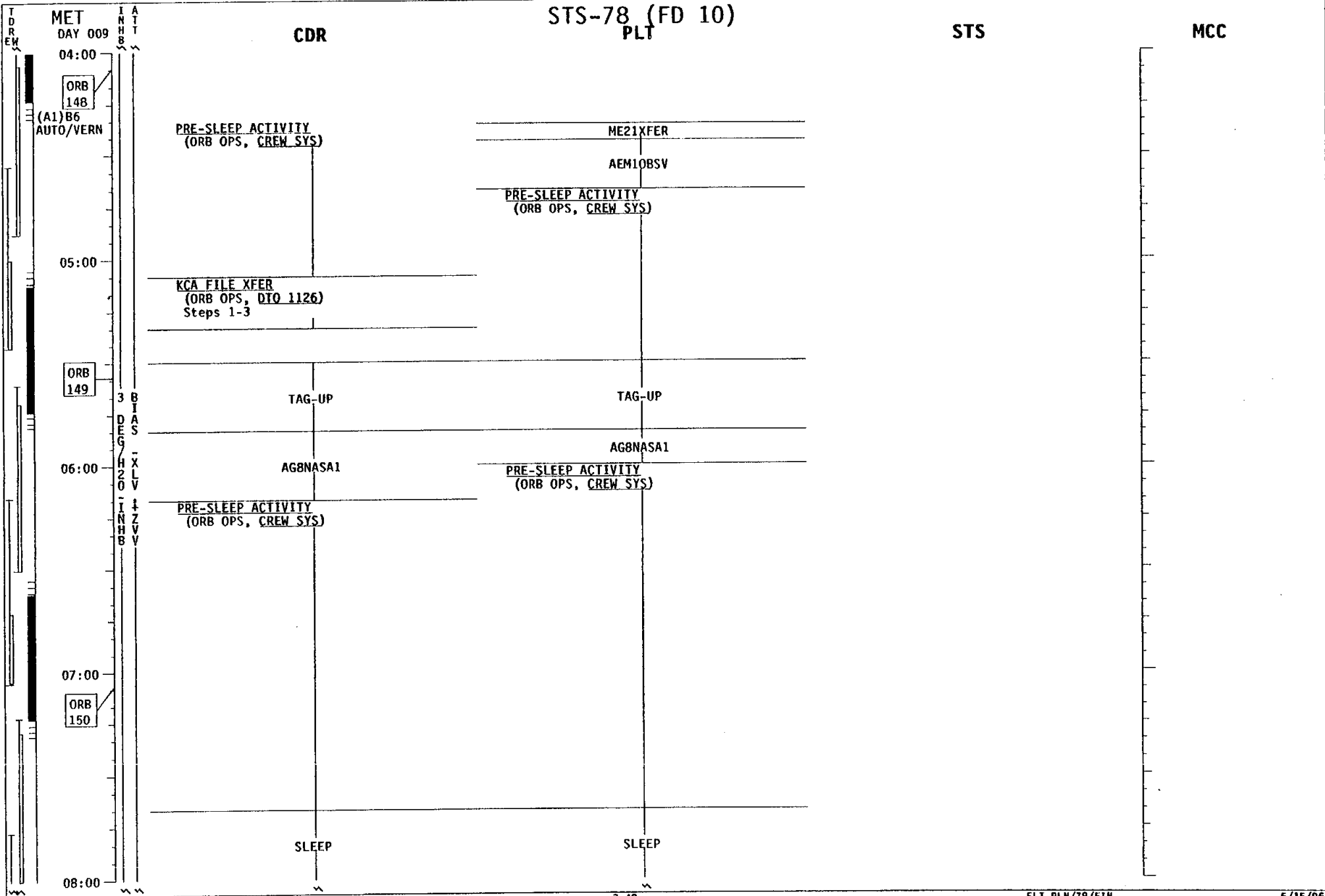
SLEEP





STS-78 (FD 10)





TDR EW
 MET DAY 009
 (A1)B6
 AUTO/VERN
 08:00
 ORB 151
 09:00
 3 DEEG
 10:00
 ORB 152
 11:00
 ORB 153
 12:00
 BIAS - XLV + ZVV
 13:00
 ORB 154
 3 DEEG
 14:00
 ORB 155
 15:00
 16:00

STS-78 (FD 10)
 CDR PLT

STS

MCC

SLEEP

SLEEP

FD 11

SALIVA COLLECTION
 (BIOMED, DSO 493)
 POST SLEEP ACTIVITY
 (ORB OPS, CREW SYS)

SALIVA COLLECTION
 (BIOMED, DSO 493)
 POST SLEEP ACTIVITY
 (ORB OPS, CREW SYS)

STS-78 (FD 11)

CDR

PLT

STS

MCC

MET

DAY 009

16:00

ORB
156

A1(B1)
AUTO/VERN

17:00

ORB
157

18:00

ORB
158

19:00

20:00

POST SLEEP ACTIVITY
(ORB OPS, CREW SYS)

Config DAP: A/AUTO/VERN
Change DAP B to B1

KCA FILE XFER
(ORB OPS, DTO 1126)
Steps 1-3

POST SLEEP ACTIVITY
(ORB OPS, CREW SYS)

EXERCISE

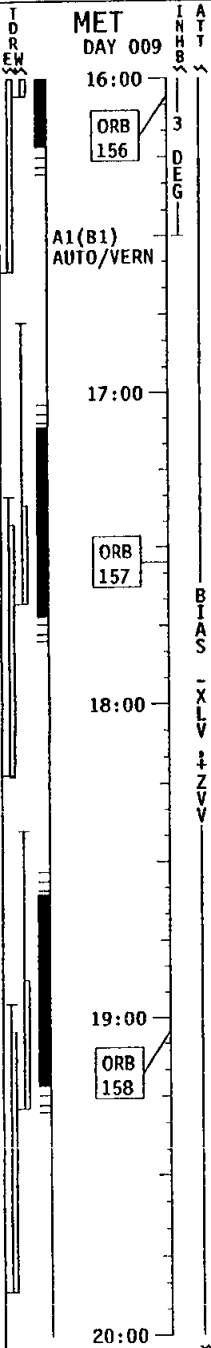
POST SLEEP ACTIVITY
(ORB OPS, CREW SYS)

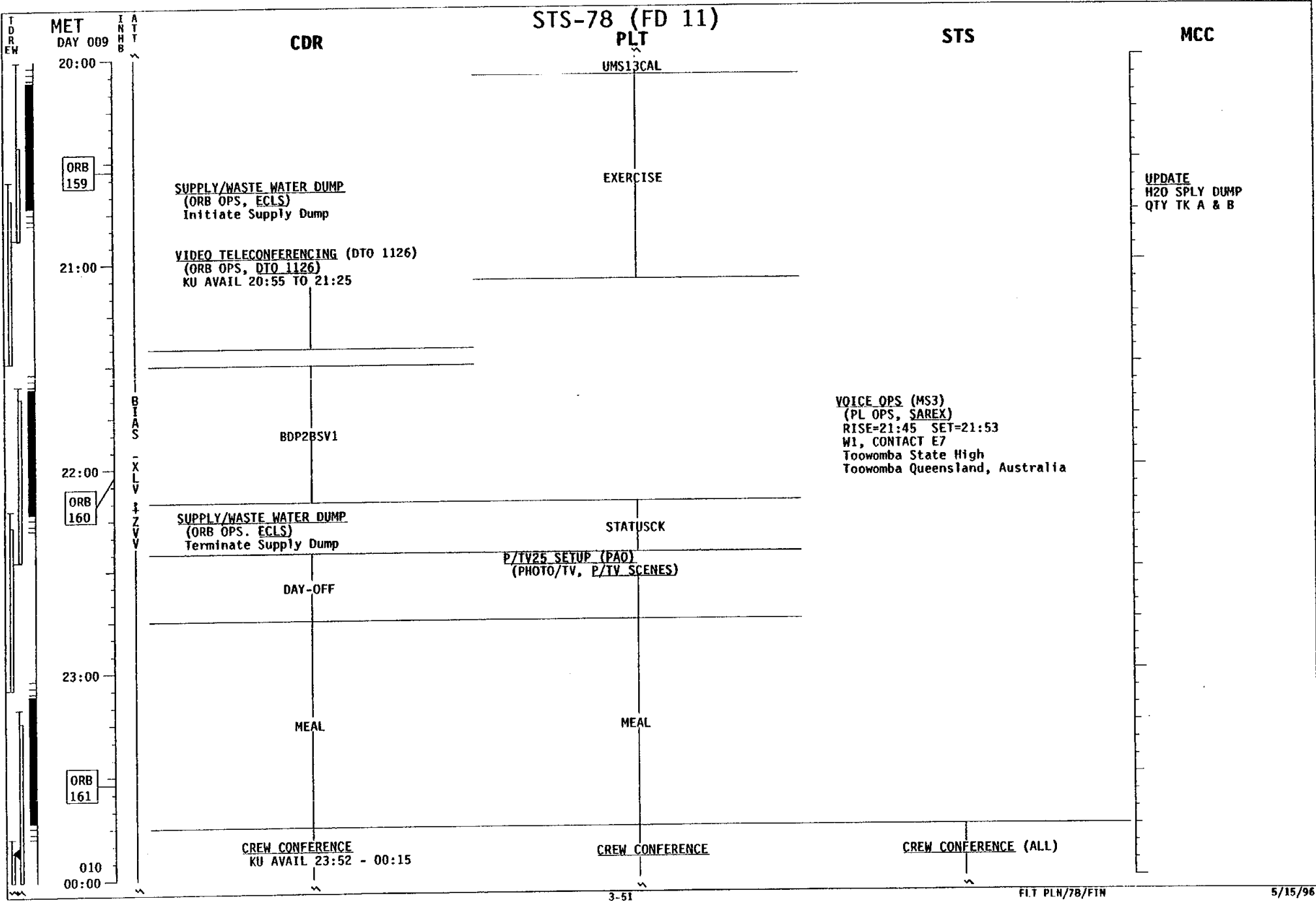
BDP11DRP

SAMS1DSK

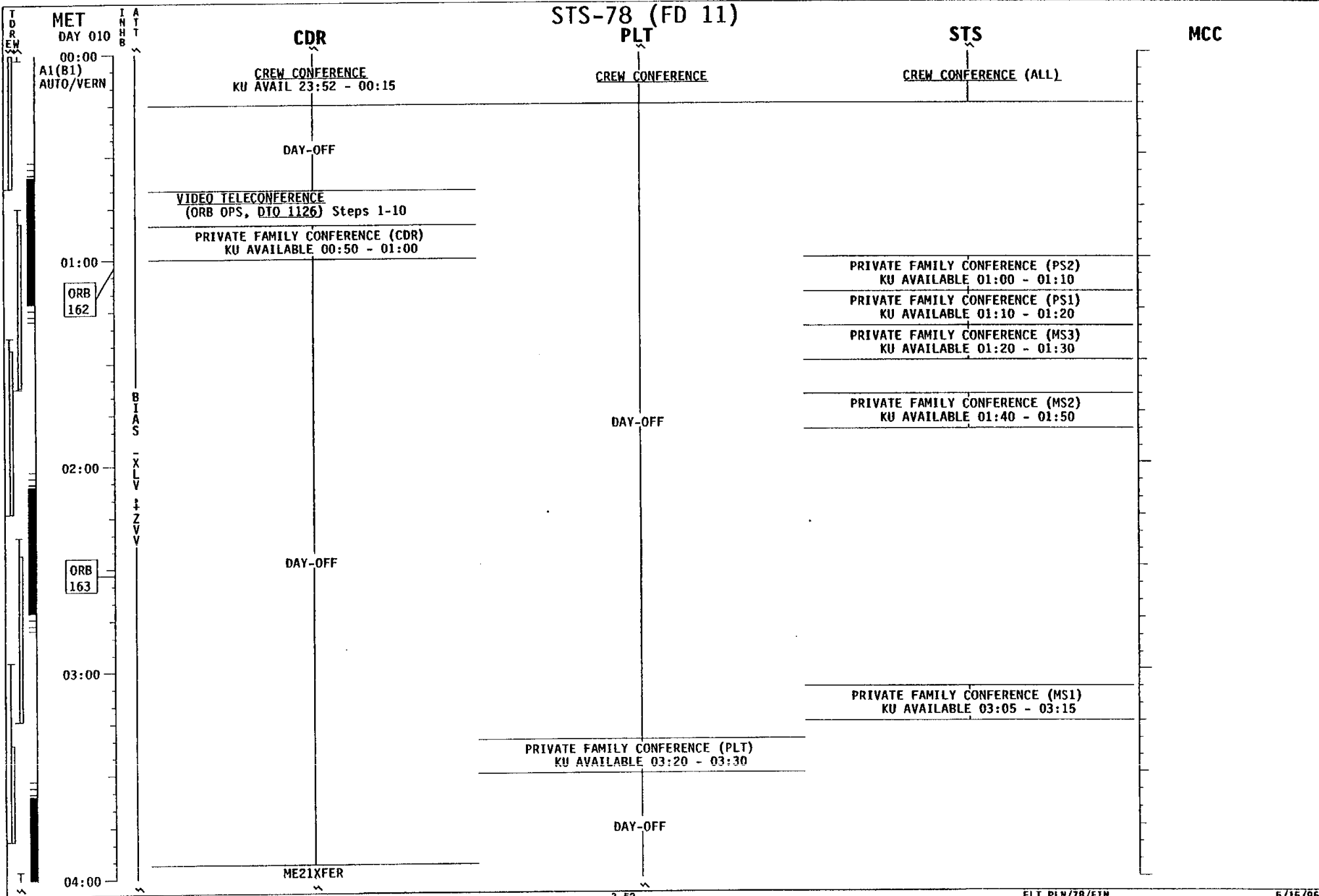
UMS13CAL

FD11 EZ ACTIVITIES:
CPA OPS (ORB OPS, CREW SYS)
QCAC FILTER INSPECT
PILOT SIMULATOR (PLT)
(ORB OPS, DTO 667)

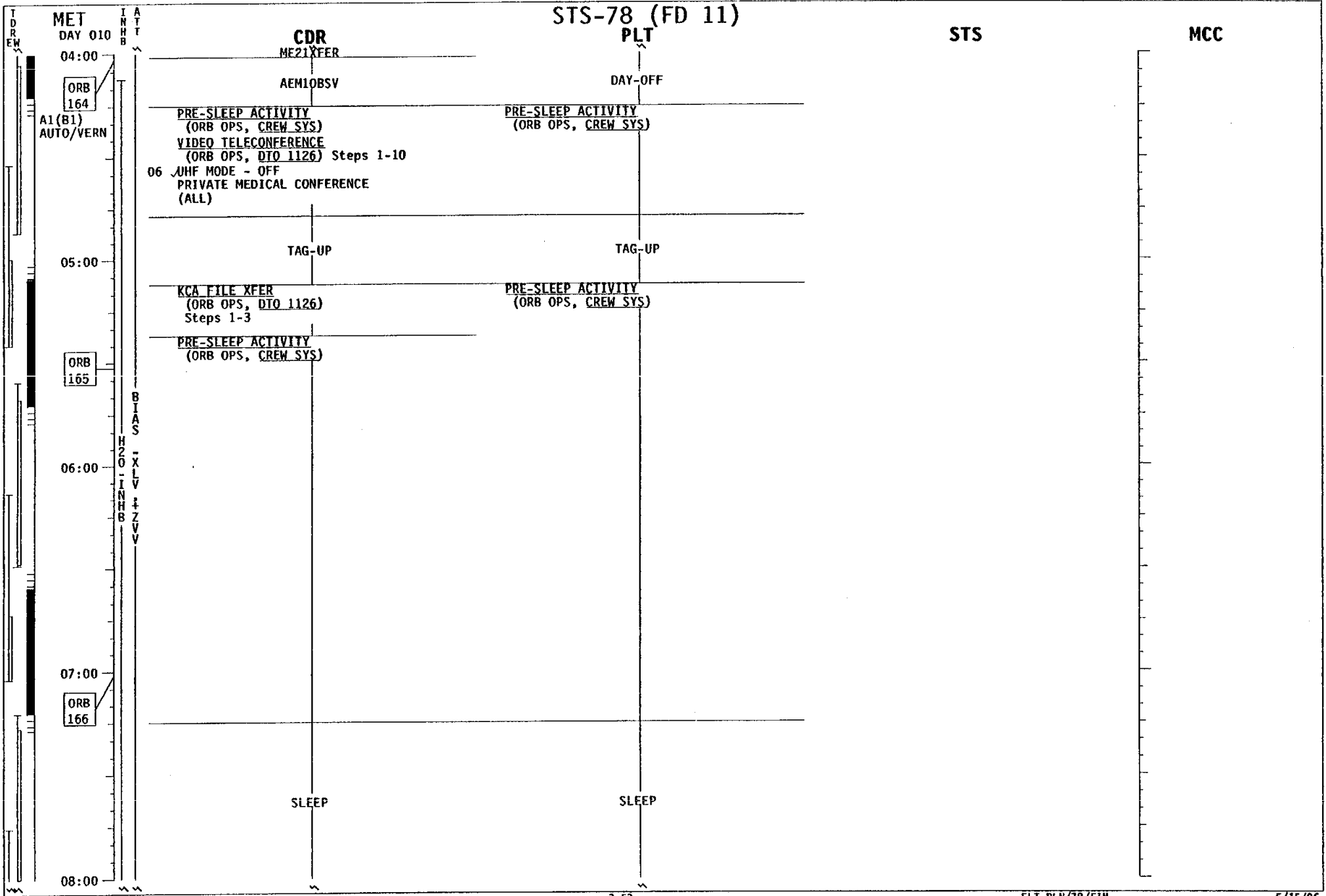




STS-78 (FD 11)



STS-78 (FD 11)



MET
DAY 010

04:00

ORB
164

A1 (B1)
AUTO/VERN

05:00

ORB
165

06:00

07:00

ORB
166

08:00

CDR
ME21 XFER

PLT

STS

MCC

AEM1 OBSV

DAY-OFF

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)
VIDEO TELECONFERENCE
(ORB OPS, DTG 1126) Steps 1-10
06 UHF MODE - OFF
PRIVATE MEDICAL CONFERENCE
(ALL)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

TAG-UP

TAG-UP

KCA FILE XFER
(ORB OPS, DTG 1126)
Steps 1-3

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

SLEEP

SLEEP

STS-78 (FD 11)

MET

DAY 010

08:00

A1(B1)
AUTO/VERN

ORB
167

09:00

10:00

ORB
168

11:00

ORB
169

12:00

13:00

ORB
170

14:00

ORB
171

15:00

16:00

CDR

PLT

STS

MCC

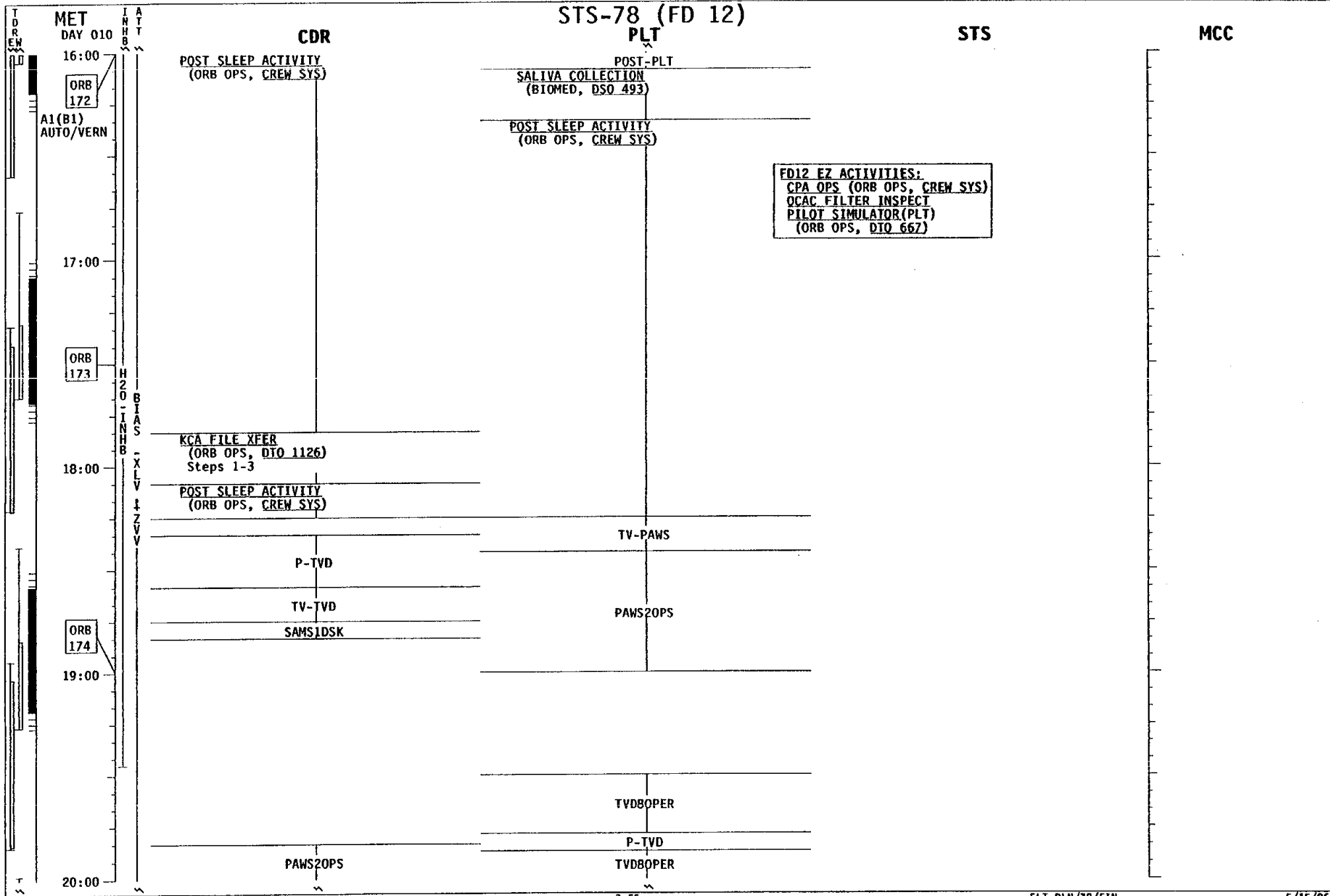
SLEEP

SLEEP

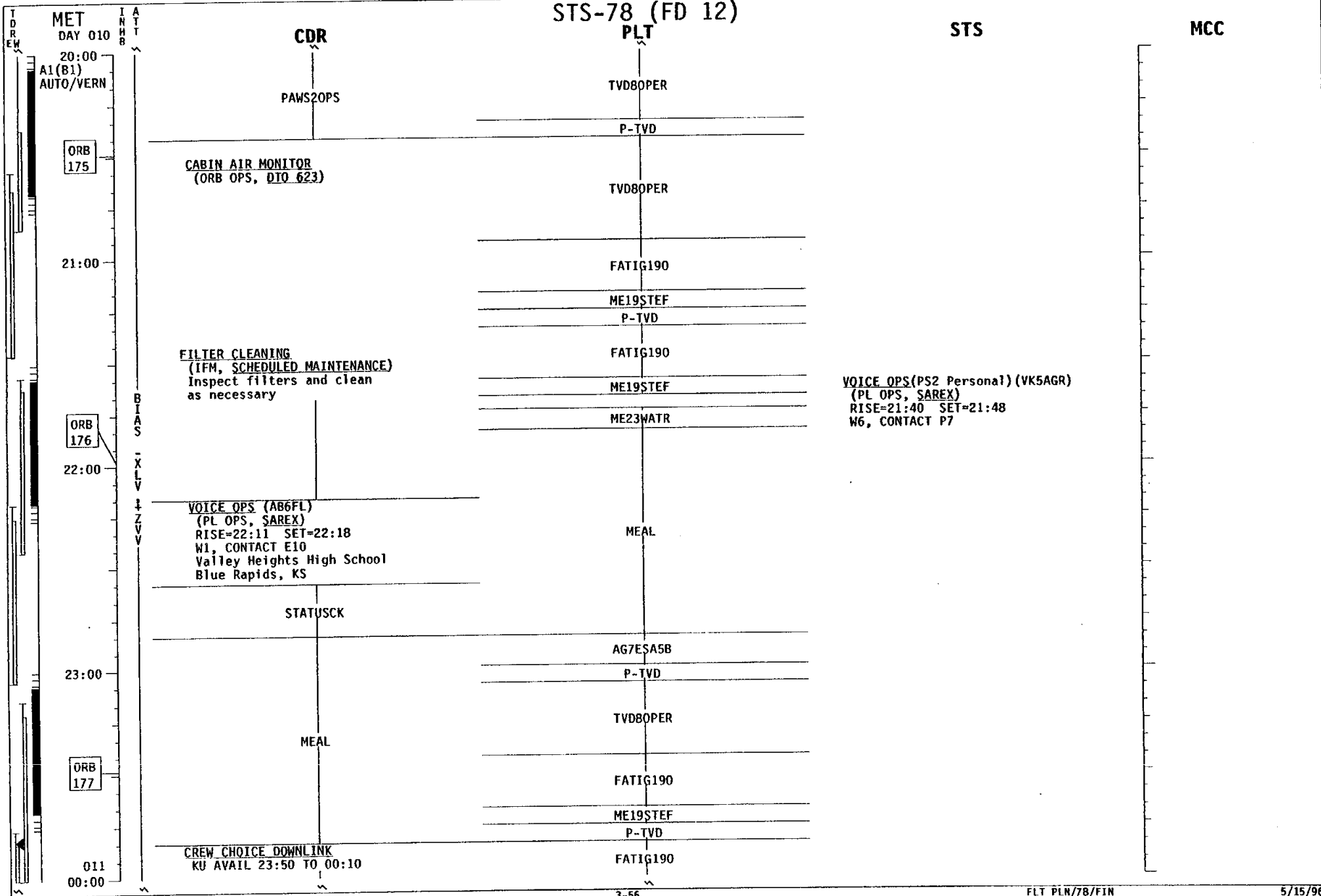
SALIVA COLLECTION
(BIOMED, DSO 493)
POST SLEEP ACTIVITY
(ORB OPS, CREW SYS)

POST-PLT

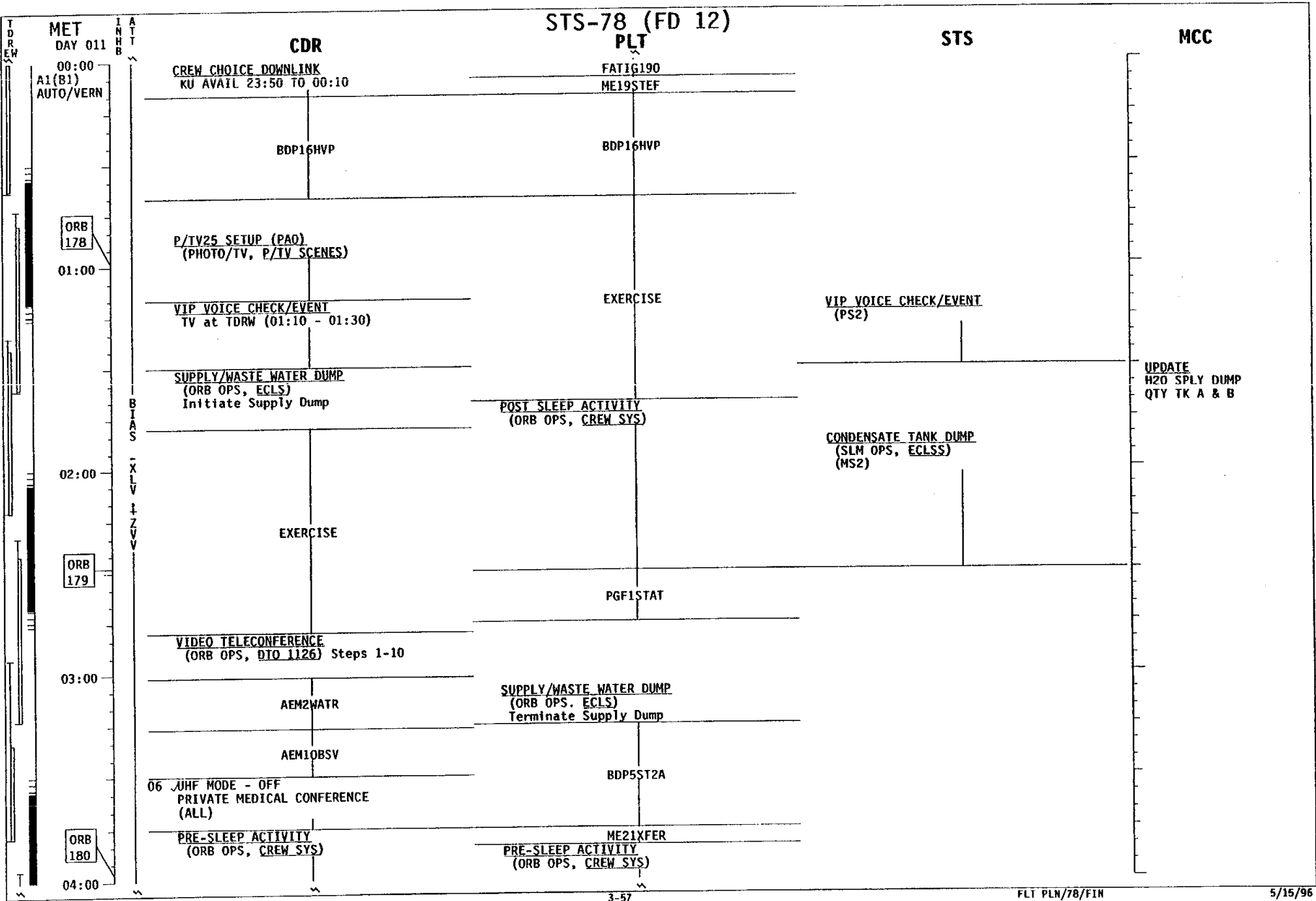
FD 12

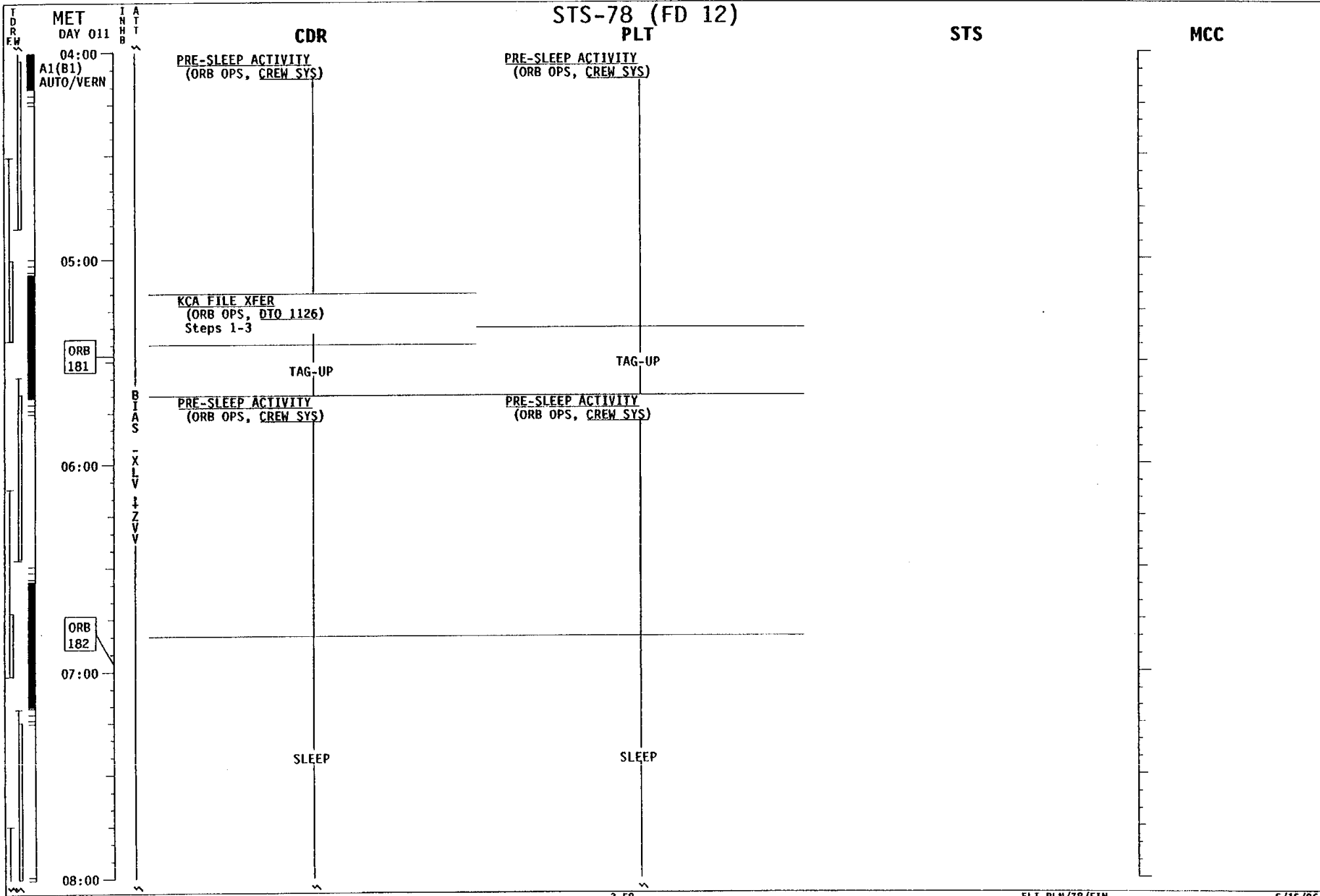


STS-78 (FD 12)

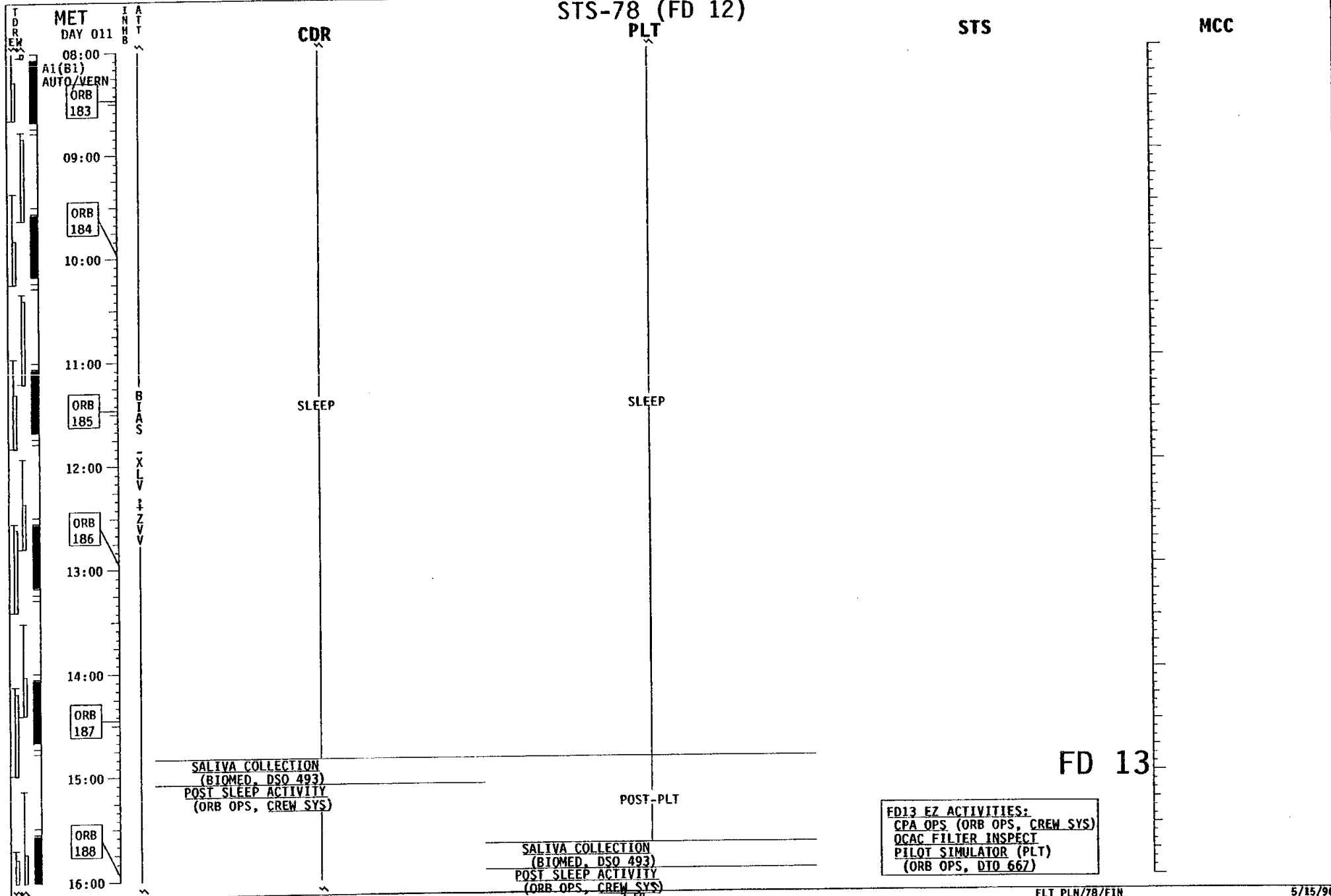


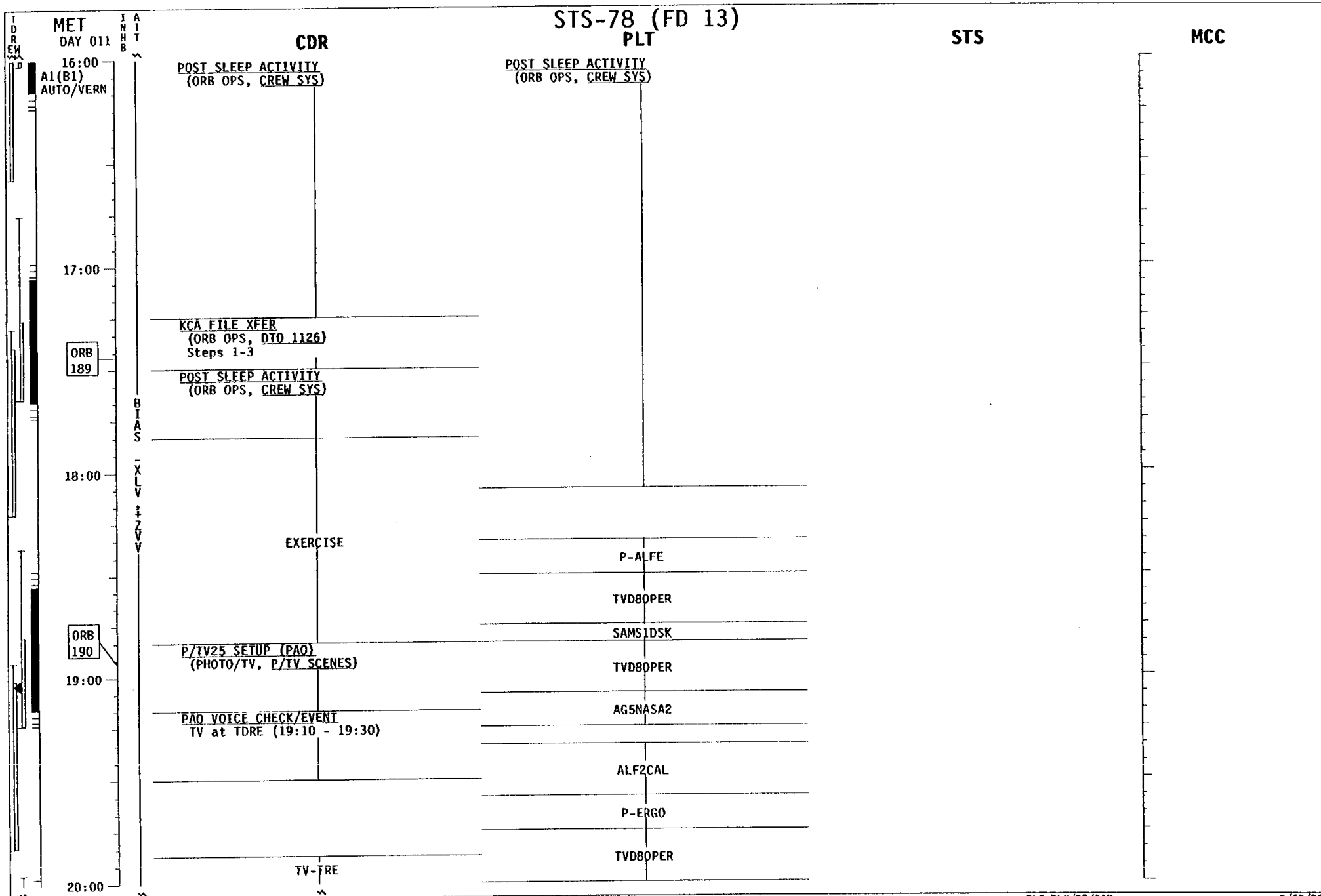
VOICE OPS (PS2 Personal) (VK5AGR)
(PL OPS, SAREX)
RISE=21:40 SET=21:48
W6, CONTACT P7





STS-78 (FD 12)





STS-78 (FD 13)

MET
DAY 011

20:00
A1(B1)
AUTO/VERN

ORB
191

21:00

ORB
192

22:00

23:00

ORB
193

012
00:00

I
N
T

B
I
A
S
-
X
L
V
Z
V
V

CDR

TV-TRE
TREIDON

CABIN AIR MONITOR
(ORB OPS, DIO 623)

ME20CENT

ME20CENT

STATUSCK

TV-ALFE

CREW CHOICE DOWNLINK
KU AVAIL 22:06 TO 22:23

MEAL

UMS13CAL

PLT

FATIG190

ME19STEF
P-ALFE

FATIG190

ME19STEF

P-ERGO

EXERCISE

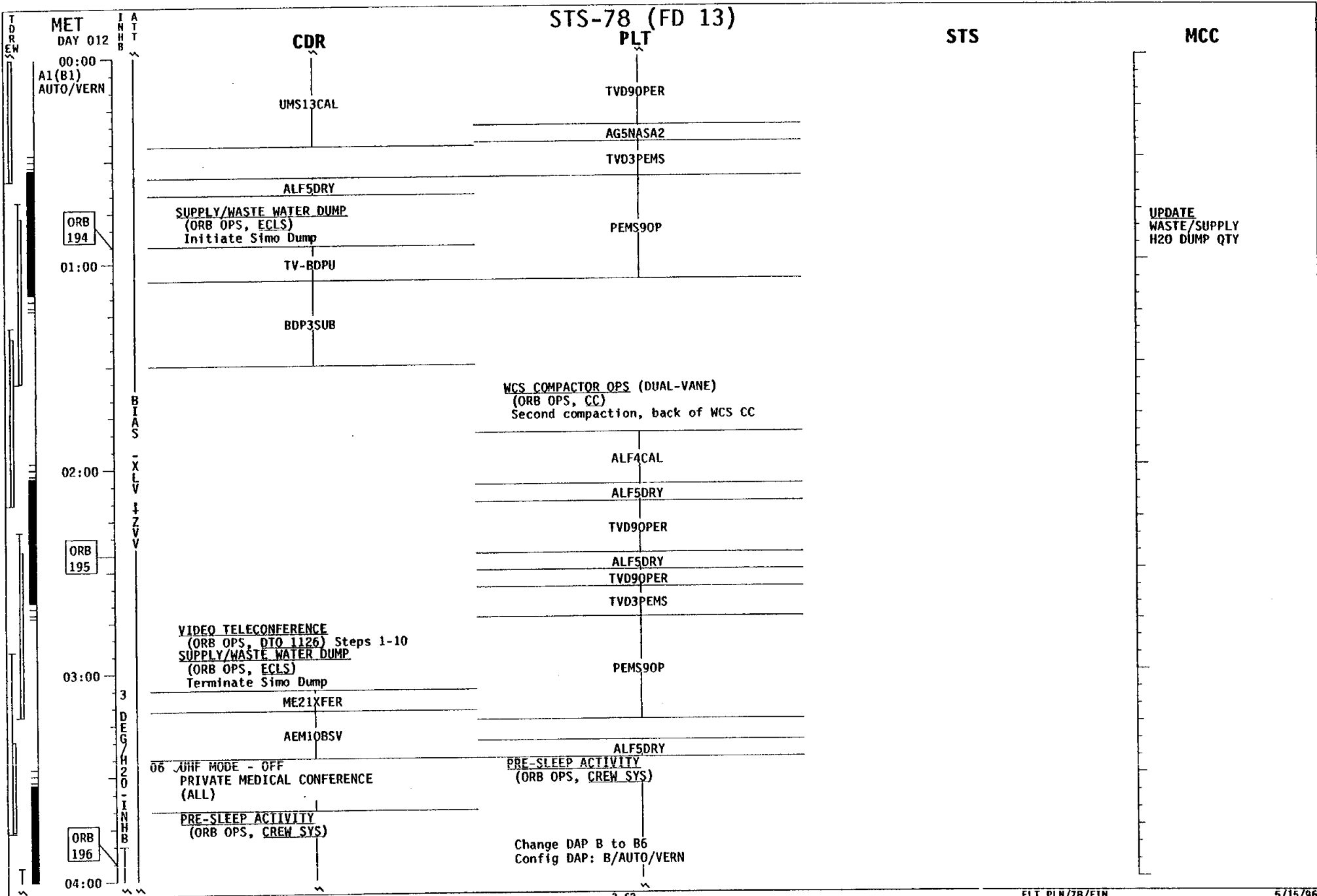
MEAL

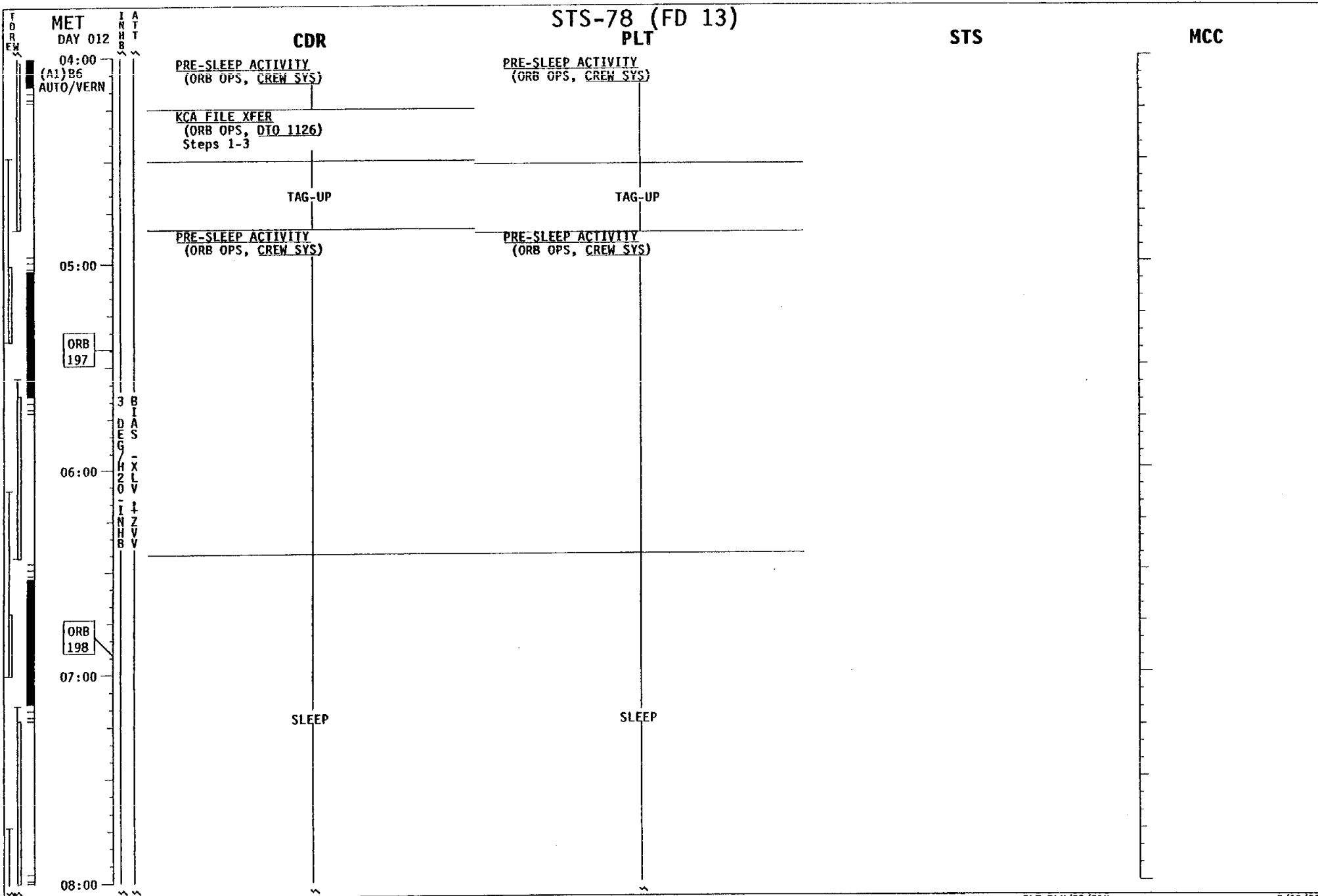
POST SLEEP ACTIVITY
(ORB OPS, CREW SYS)

TVD9OPER

STS

MCC





T
D
R
E
W

MET
DAY 012

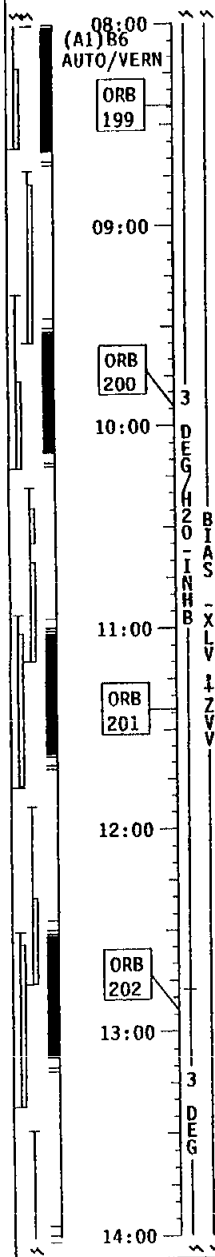
I
N
H
T
B

STS-78 (FD 13)
PLT

CDR

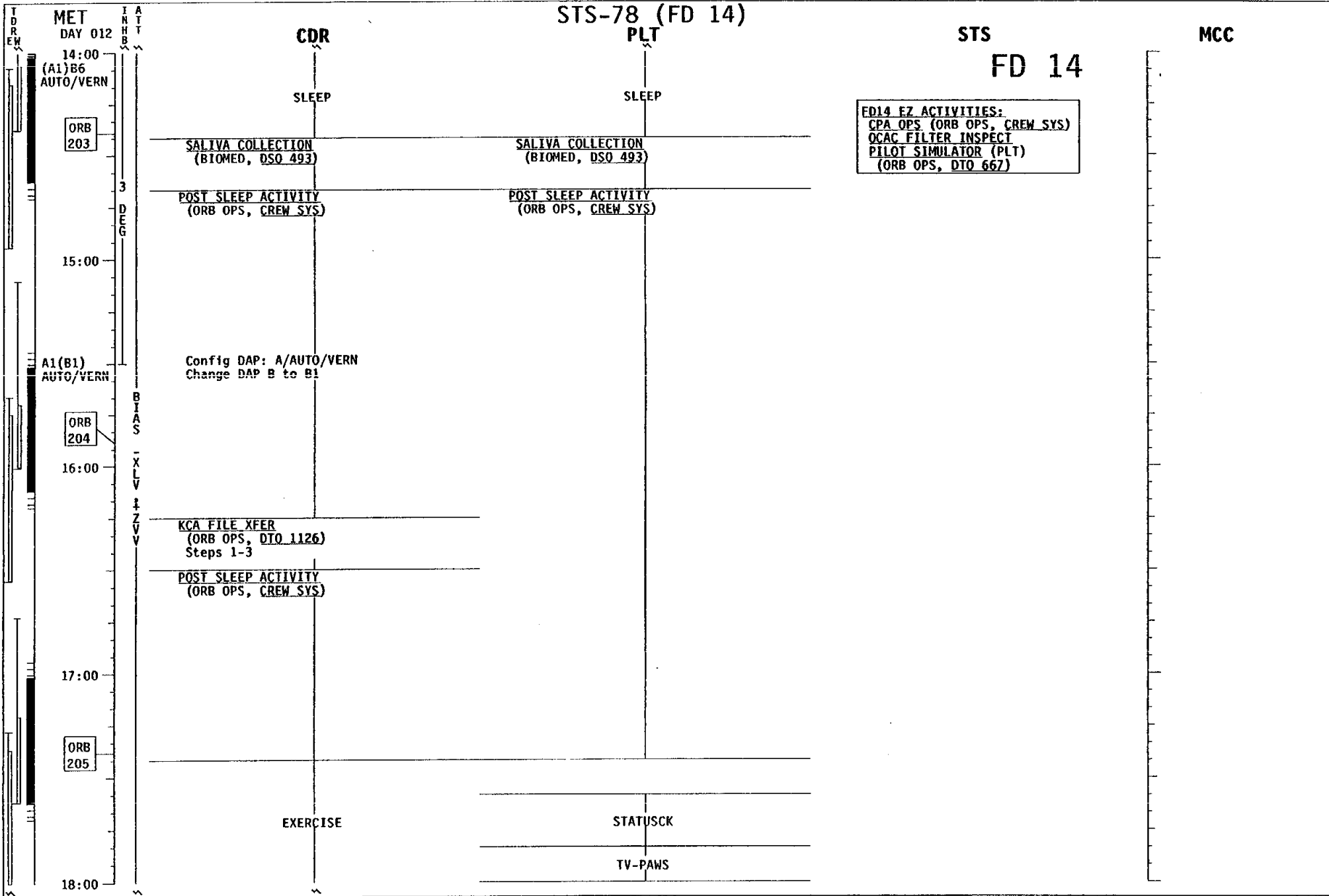
STS

MCC



SLEEP

SLEEP



STS-78 (FD 14)
PLT

STS

MCC

TDR

MET
DAY 012

INT
INH
B

18:00
A1(B1)
AUTO/VERN

CDR

EXERCISE

AG10NA2B

CABIN AIR MONITOR
(ORB OPS, DTO 623)

ORB
206

PAWS20PS

19:00

CREW CHOICE DOWNLINK
KU AVAIL 19:05 TO 19:25

BIAS

20:00

EXERCISE

ORB
207

TV-ERGO

TVD9OPER

21:00

P-ERGO

TVD3PEMS

PEMS90P

PAWS20PS

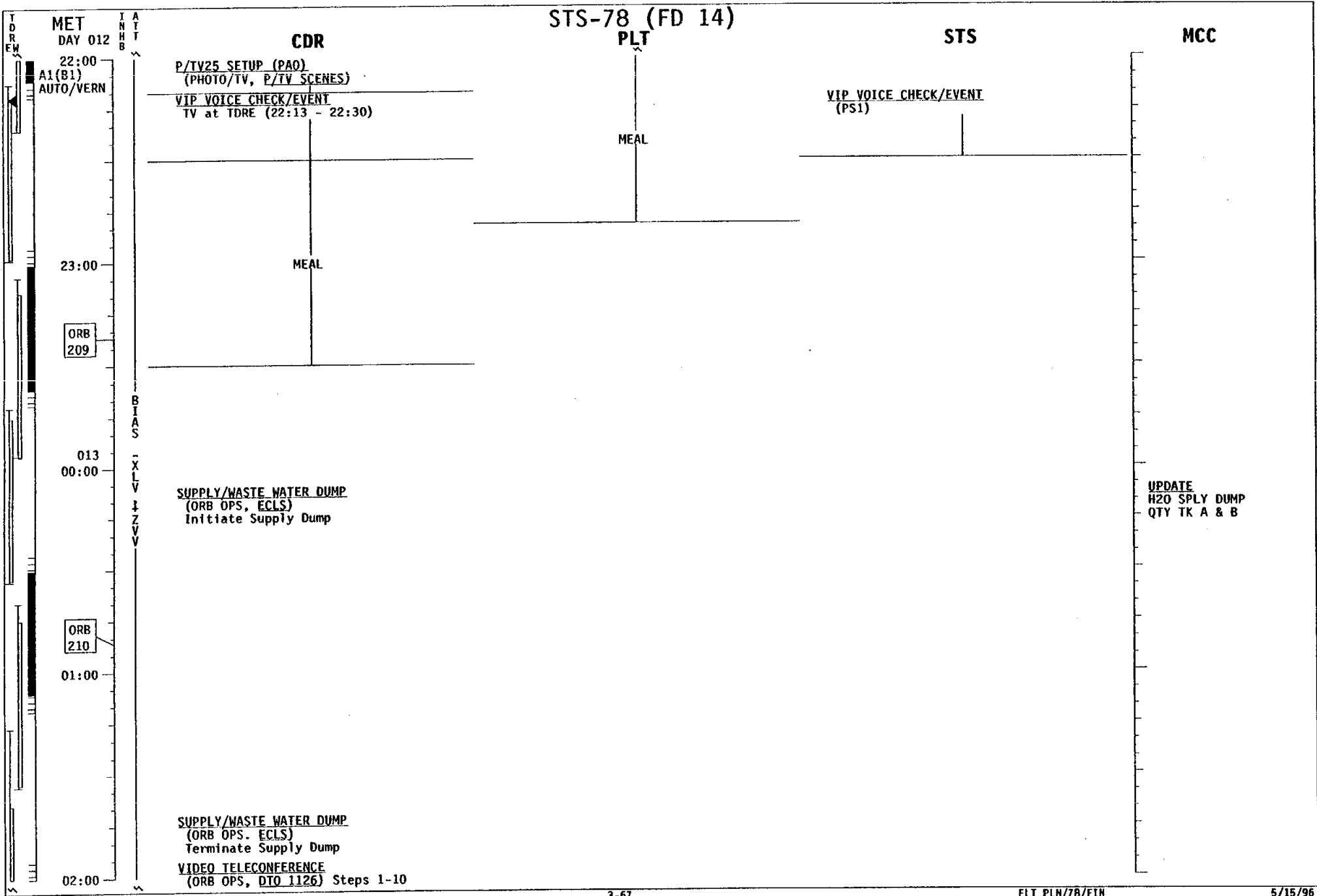
VOICE OPS (MS2 Personal) (ZS6BTD)
(PL OPS, SAREX)
RISE=21:12 SET=21:20
W6, CONTACT P4

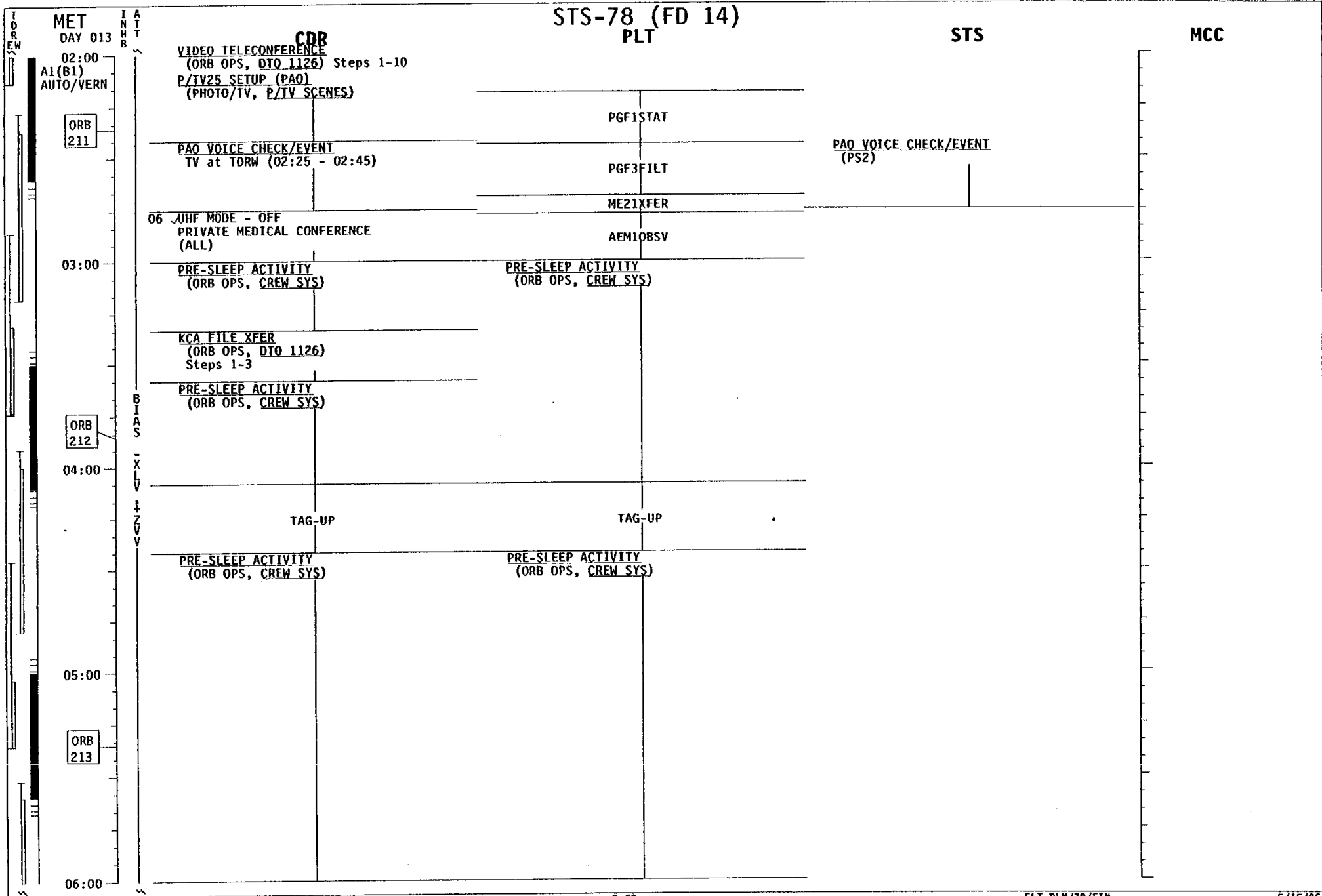
ORB
208

P/TV25 SETUP (PAO)
(PHOTO/TV, P/TV SCENES)

MEAL

22:00





STS-78 (FD 14)

CDR

PLT

STS

MCC

MET
DAY 013

A1(B1)
AUTO/VERN

06:00
ORB 214

07:00

08:00
ORB 215

09:00

09:00
ORB 216

10:00

11:00
ORB 217

12:00

12:00
ORB 218

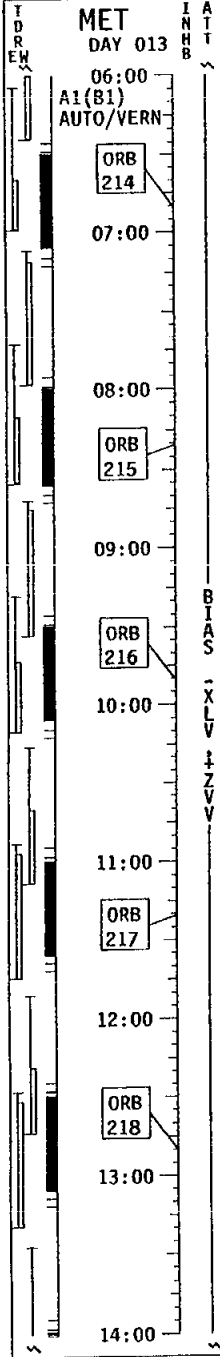
13:00

14:00

BIAS
XLV
ZVV

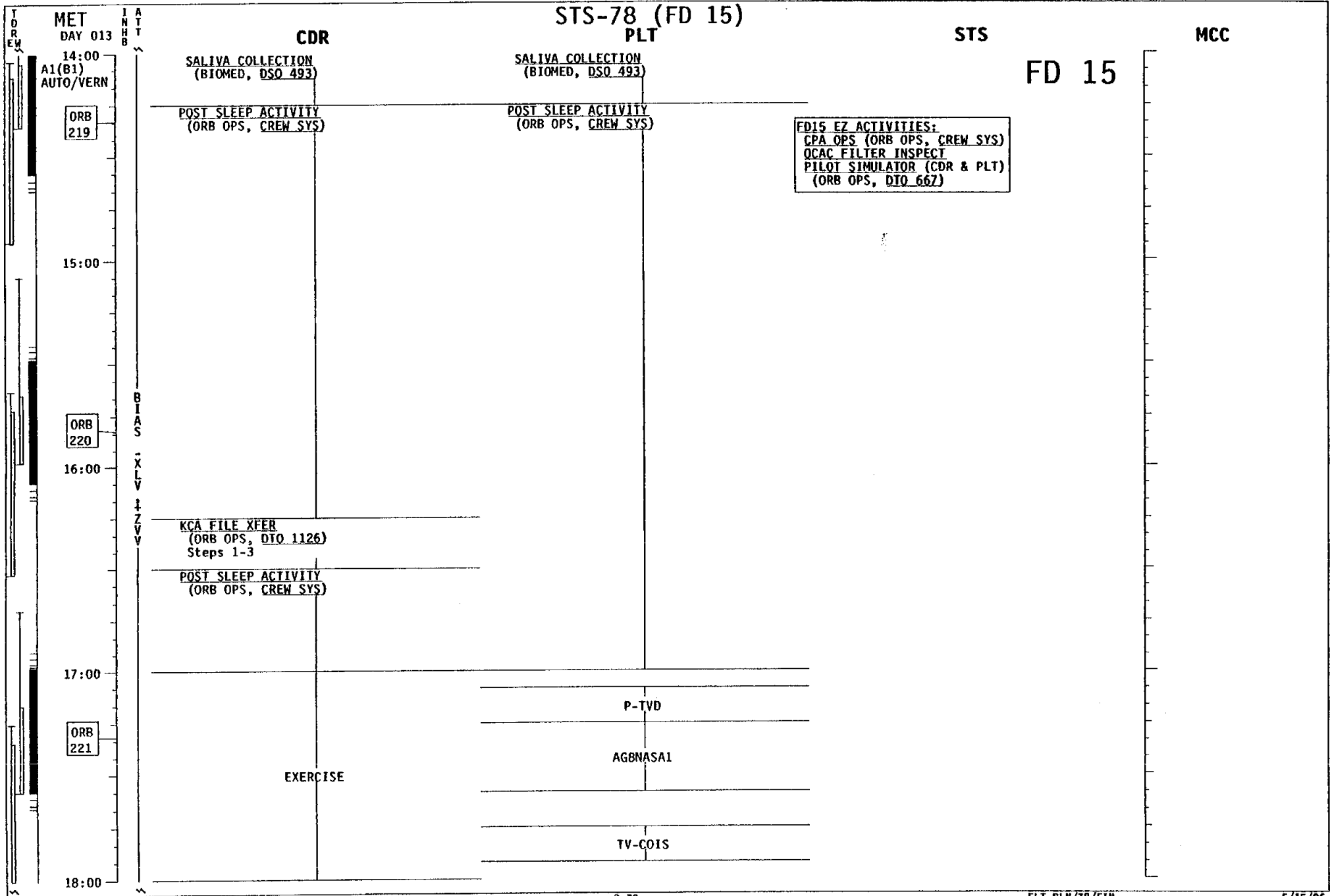
INT
INH
B

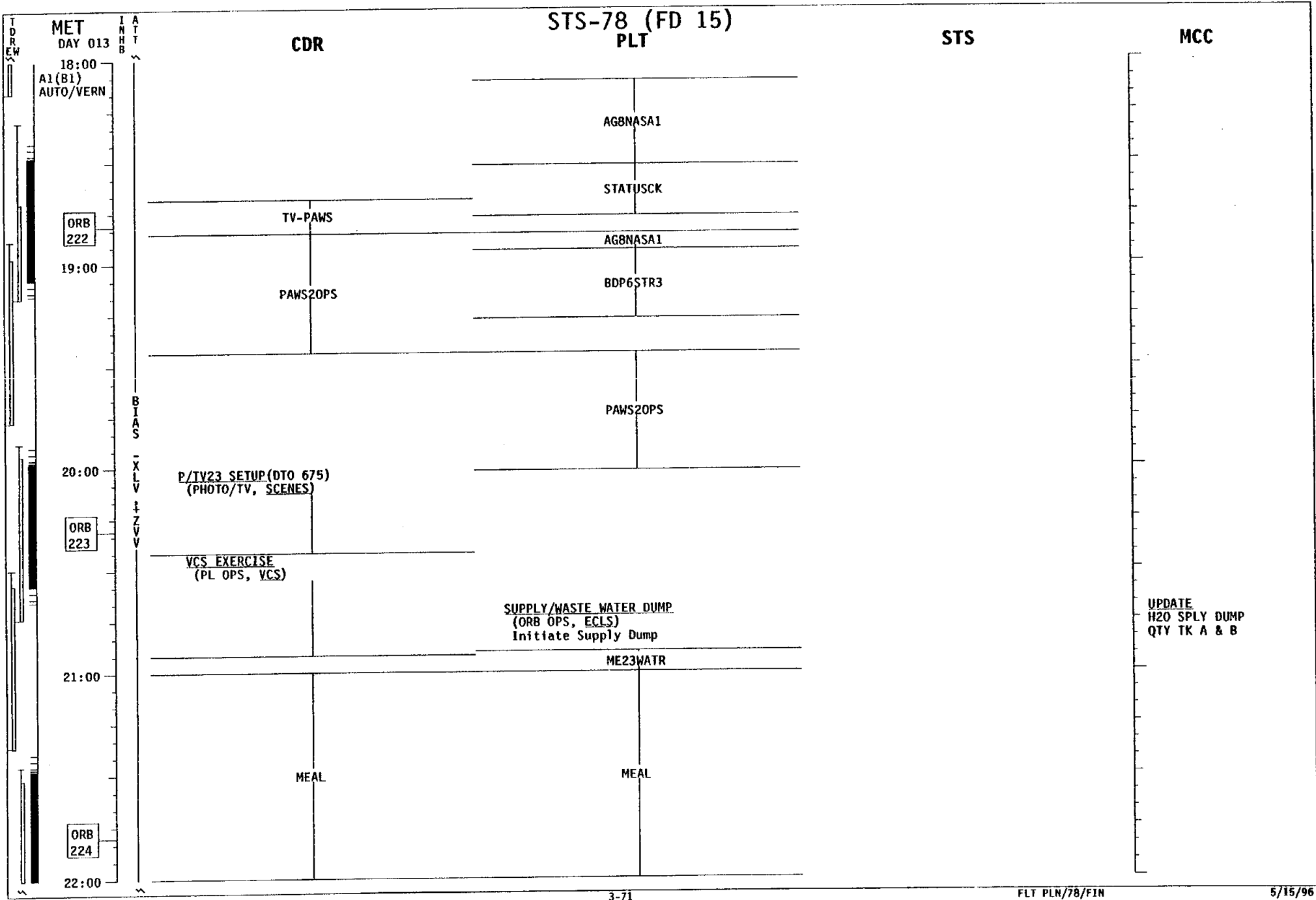
DR
EW



SLEEP

SLEEP





TDRH
MET
DAY 013
22:00
A1(B1)
AUTO/VERN
ORB 225
ORB 226
01:00
02:00

INT
BIAS - XLV IZVV

CDR

STS-78 (FD 15)
PLT

STS

MCC

CREW CHOICE DOWNLINK
KU AVAIL 22:00 TO 22:18

SUPPLY/WASTE WATER DUMP
(ORB OPS, ECLS)
Terminate Supply Dump

BDP12SHD

EXERCISE

VOICE OPS((PS1 Personal)(VK6IU)
(PL OPS, SAREX)
RISE=23:03 SET=23:11
W6, CONTACT P6

TVD1PREP

VCS EXERCISE
(PL OPS, VCS)

FILTER CLEANING
(IFM, SCHEDULED MAINTENANCE)

014
00:00

TRE1DON

PAWS3STO

VCS DEACT/STOW
(PL OPS, VCS)

ORB 226

UMS13CAL

01:00

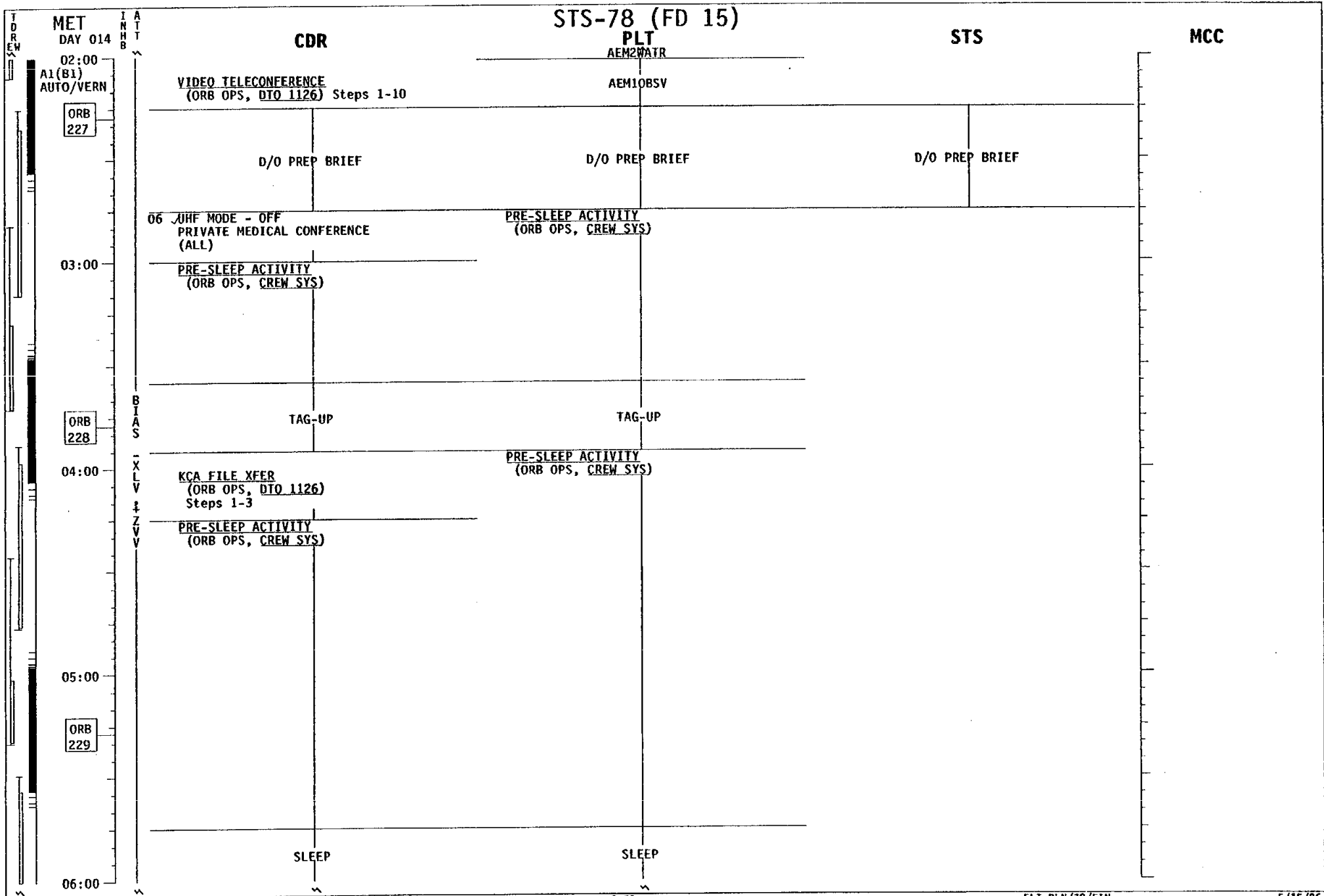
VOICE OPS(BACKUP), (W5ZD)
(PL OPS, SAREX)
RISE=01:19 SET=01:26
W1 CONTACT B1
SAREX STOW
(PL OPS, SAREX)

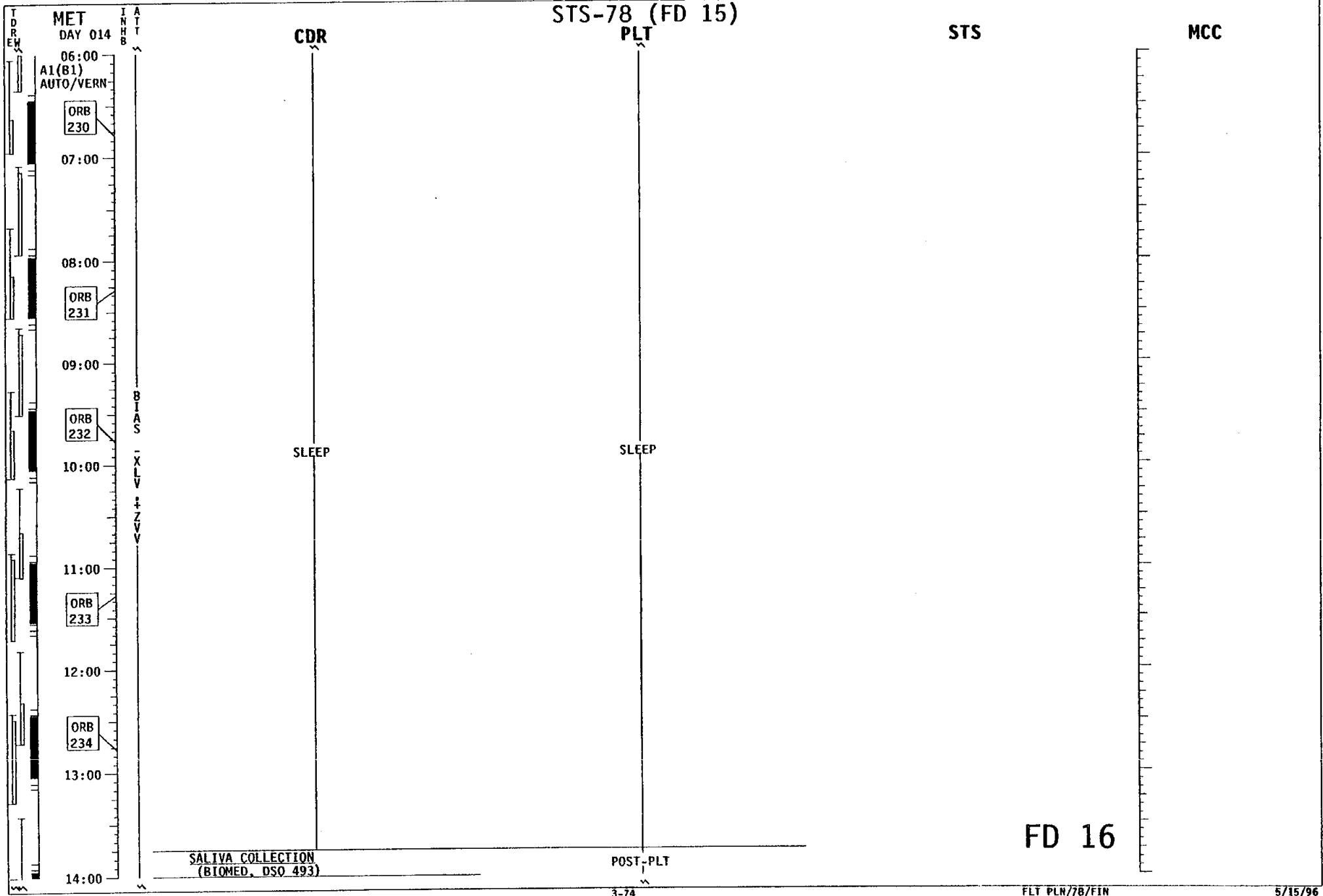
PGF1STAT

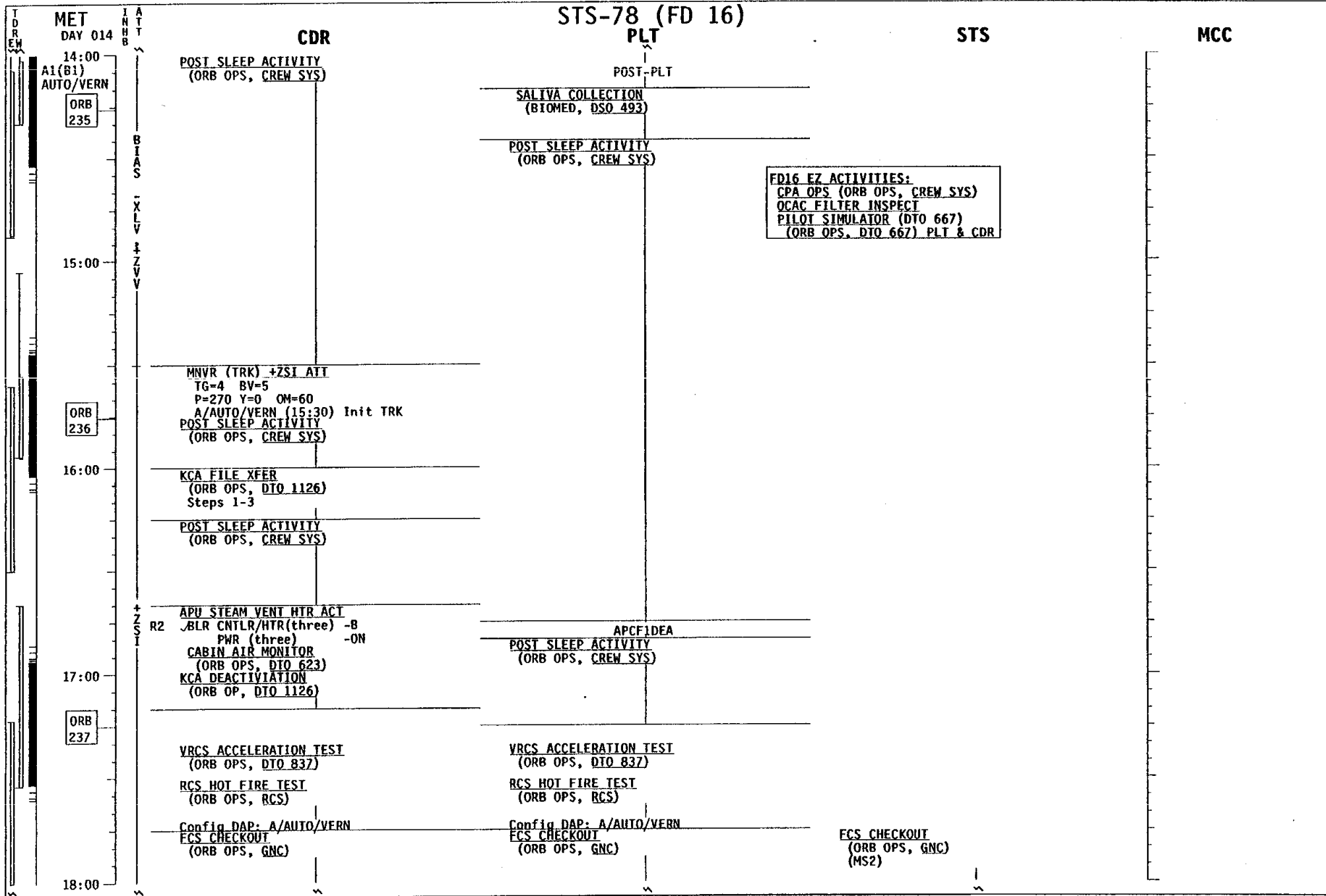
ME21XFER

AEM2WATR

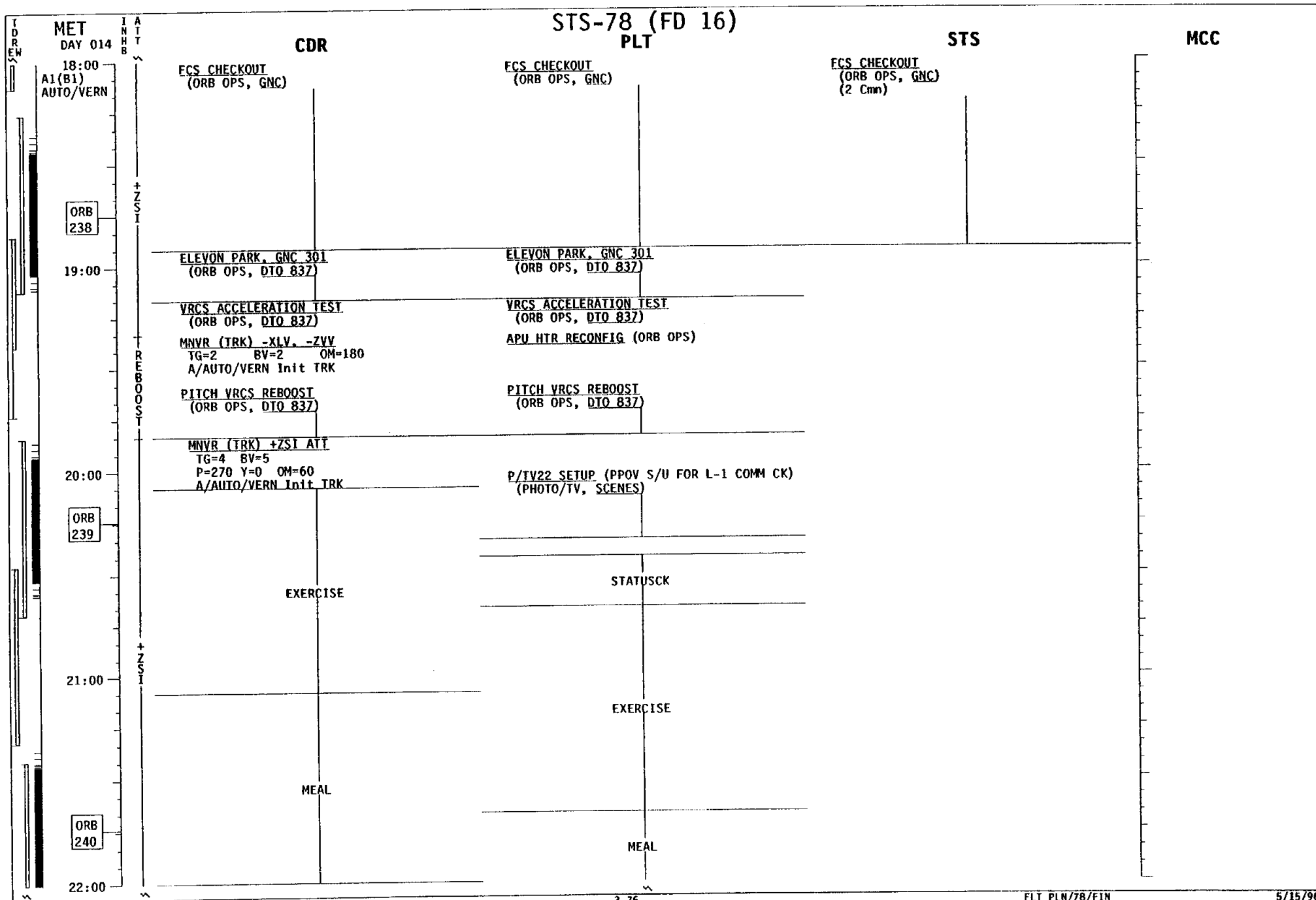
02:00

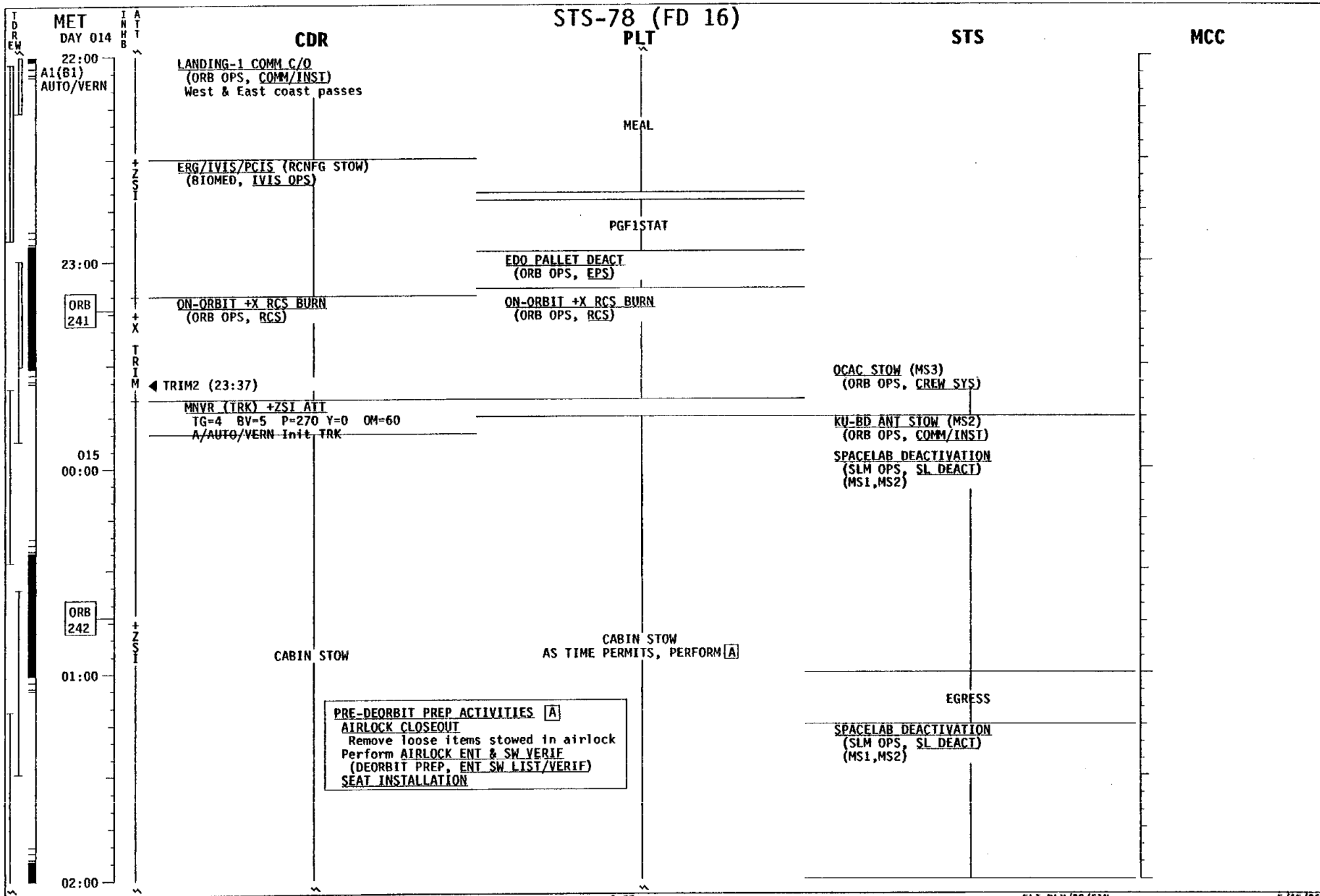


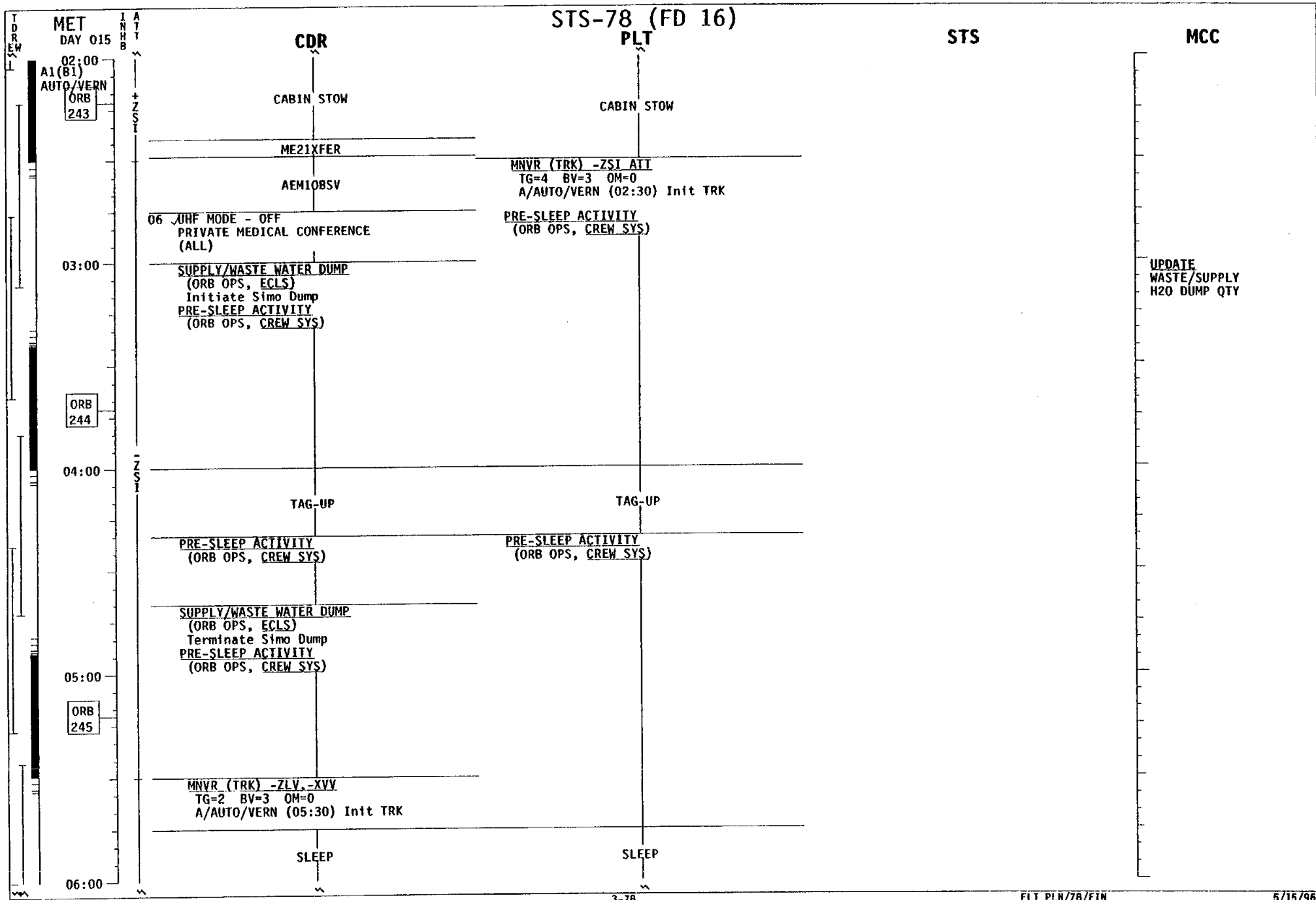


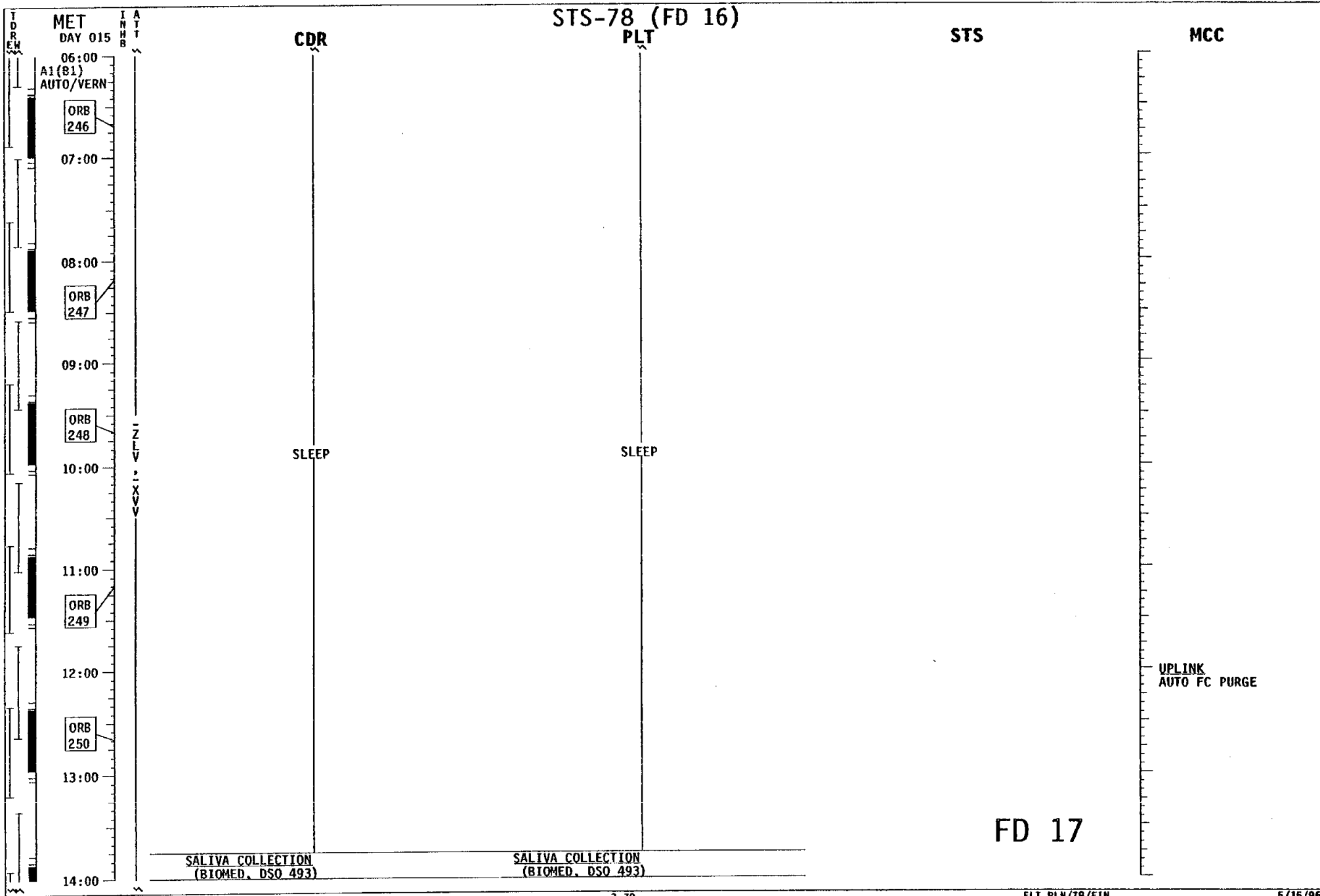


FD16 EZ ACTIVITIES:
 CPA OPS (ORB OPS, CREW SYS)
 QCAC FILTER INSPECT
 PILOT SIMULATOR (DIO 667)
 (ORB OPS, DIO 667) PLT & CDR









STS-78 (FD 17)
PLT

STS

MCC

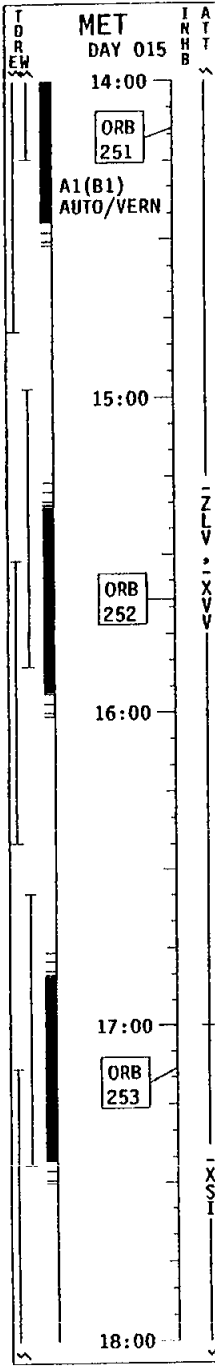
MET
DAY 015

CDR

POST SLEEP ACTIVITY
(ORB OPS, CREW SYS)

POST SLEEP ACTIVITY
(ORB OPS, CREW SYS)

EZ ACTIVITIES BEFORE LEAVING FLIGHT PLAN:
CPA OPS (ORB OPS, CREW SYS)
AIR SAMPLE
RCD MET on bottle
FLUID LOADING PREP
Fill drink containers per MCC
Do not STOW P/TV C/L until PPOV is
configured for entry



06 JHF MODE - OFF
PRIVATE MEDICAL CONFERENCE
(ALL)

PRIORITY PWRUP GROUP B
(ORB PKT, PRIOR PWRDN)

← MNVR (TRK) -XSI ATT
TG=4 BV=5
P=184 Y=0 OM=270
A/AUTO/VERN (17:00) Init TRK

GO TO DEORBIT PREP AT 15/17:20

STS-78 DAP TABLES

DAP TABLES

DAP TABLES

<u>DAP</u>	<u>PURPOSE</u>	<u>DAP</u>	<u>PURPOSE</u>
A1	- NOMINAL	B1	- NOMINAL
A2	- PTC		OMS & RCS BURNS
A3	- GG	B2	- LOSS OF VERN (TAIL ONLY)
A4	- PRE/POST DEPLOY	B3	- LOSS OF VERN (NOSE & TAIL)
A5	- LOSS OF VERN (NOSE & TAIL)	B4	- SSUS DEPLOY
A6	- LOSS OF VERN (TAIL ONLY)	B5	- COAS CAL
A7	- RENDEZVOUS	B6	- SAMS/BDPU
A8	- PROX OPS	B7	- RENDEZVOUS
		B8	- PROX OPS

CNT ACC = 0 UNLOADED RMS
 = 1-5 NOT USED

UNIV PTG	
TGT ID	= 1 Orbiting Vehicle = 2 Earth ctr = 3 Earth tgt Input LAT (± 90) LON (± 180 , + = East) ALT (-3444.0 to 20000.0 nm) = 4 Sun ctr = 5 Celestial tgt Input RA (0-359.99) DEC (± 90) = 11-110 Nav Stars
BODY VECT	= 1 +X* = 2 -X* = 3 -Z* = 4 -Y Star Tracker* = 5 Optional Input P (0-359.99) Y (270-359.99, 0-90) * input OM \rightarrow OM (0-359.99)
MON AXIS	= 1 +X = 2 -X

STS-78 GENERIC DAP A CONFIGURATIONS

	ITEM #	A1	A2	A3	A4	A5	A6	A7	A8
PRI									
ROT RATE	10	0.2000	0.4000	0.2000	0.5000	0.2000	0.2000	0.2000	0.2000
ATT DB	11	5.00	1.00	1.00	3.00	5.00	5.00	2.00	2.00
RATE DB	12	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
ROT PLS	13	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
COMP	14	.000	.000	.000	.000	.000	.000	.000	.000
P OPTION	15	ALL	ALL	ALL	ALL	ALL	TAIL	ALL	ALL
Y OPTION	16	ALL	ALL	TAIL	ALL	ALL	TAIL	ALL	ALL
TRAN PLS	17	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.05
ALT									
RATE DB	18	0.200	0.200	0.200	0.200	0.070	0.070	0.200	0.200
JET OPT	19	ALL	ALL	ALL	ALL	ALL	TAIL	ALL	ALL
# JETS	20	2	2	2	2	1	1	2	2
ON TIME	21	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
DELAY	22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VERN									
ROT RATE	23	0.2000	0.4000	0.0080	0.2000	0.2000	0.2000	0.2000	0.2000
ATT DB	24	1.000	1.000	0.070	1.000	1.000	1.000	1.000	1.000
RATE DB	25	.020	.020	.010	.020	.020	.020	.020	.020
ROT PLS	26	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
COMP	27	.000	.000	.000	.000	.000	.000	.000	.000
CNTL ACC	28	0	0	0	0	0	0	0	0
PURPOSE		NOMINAL	PTC	GG	PRE/ POST DEPLOY	LOSS OF VERN (N/T)	LOSS OF VERN (TAIL ONLY)	RNDZ	PROX OPS

STS-78 GENERIC DAP B CONFIGURATIONS (DAP B6 STS-78 SPECIFIC)

	ITEM #	B1	B2	B3	B4	B5	B6	B7	B8
PRI									
ROT RATE	30	0.5000	0.2000	0.2000	0.2000	0.2000	1.000	0.5000	0.2000
ATT DB	31	3.00	3.00	3.00	0.30	3.00	2.00	2.00	2.00
RATE DB	32	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
ROT PLS	33	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
COMP	34	.000	.000	.000	.000	.000	.000	.000	.000
P OPTION	35	ALL	TAIL	ALL	TAIL	TAIL	ALL	ALL	ALL
Y OPTION	36	ALL	TAIL	ALL	TAIL	TAIL	ALL	ALL	ALL
TRAN PLS	37	0.10	0.02	0.02	0.02	0.02	0.02	0.05	0.01
ALT									
RATE DB	38	0.200	0.070	0.070	0.200	0.200	0.200	0.200	0.200
JET OPT	39	ALL	TAIL	ALL	ALL	ALL	ALL	ALL	ALL
# JETS	40	2	1	1	2	2	2	2	2
ON TIME	41	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
DELAY	42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VERN									
ROT RATE	43	0.2000	0.2000	0.2000	0.0080	0.0160	0.2000	0.2000	0.2000
ATT DB	44	1.000	1.000	1.000	0.100	0.033	3.000	1.000	1.000
RATE DB	45	.020	.020	.020	.010	.020	.020	.020	.020
ROT PLS	46	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
COMP	47	.000	.000	.000	.000	.000	.000	.000	.000
CNTL ACC	48	0	0	0	0	0	0	0	0
PURPOSE		NOM OMS RCS BURNS	LOSS OF VERN (TAIL ONLY)	LOSS OF VERN (N/T)	SSUS DEPLOY	COAS CAL	SAMS/ BDPU	RNDZ	PROX OPS

NOTE: **BOLD-ITALIC** indicates a change from the I-load

The sections following this divider page will not be included in flight copies.

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ATTITUDE TIMELINE

ATTITUDE
TIMELINE

Attitude Timeline

MET/GMT	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
1 000/01:11:00 MET 172/16:00:00 GMT	TGT=2 BV=5 P=178.00 Y= 0.00 OM= 0.00	A6 AUTO ALT RATE 0.2000 DB AT 5.00 DB RT 0.070	EARTH R 0 P 178	LVLH R= 0.00 P= 92.00 Y= 0.00	Post Insertion LMS Attitude Bias -XLV +ZVV
2 000/02:30:00 MET 41:02 172/17:19:00 GMT 30:02	INRTL R= 92.00 MNVR P=218.00 Y= 17.00	A1 AUTO VERN RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 336 P 61	STARS -Y: 38 -Z: 13	IMU ALIGN STAR PAIR C1 LOS: 0/03:26
3 000/02:50:00 MET 03:02:56 172/17:39:00 GMT 51:56	TGT=2 BV=5 P=178.00 Y= 0.00 OM= 0.00	A1 AUTO VERN RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 360 P 178	LVLH R= 0.00 P= 92.00 Y= 0.00	Bias -XLV +ZVV
4 014/15:30:00 MET 43:49 187/06:19:00 GMT 32:49	TGT=4 BV=5 P=270.00 Y= 0.00 OM= 60.00 RA= 103.971 DEC= 22.824N	A1 AUTO VERN RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 180 P 90	INRTL R=287.76 P= 17.14 Y= 20.08	+ZSI Bottom Sun for tires
5 014/19:20:00 MET 31:04 187/10:09:00 GMT 20:04	TGT=2 BV=2 P=180.00 Y= 0.00 OM=180.00	A1 AUTO VERN RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 121 P 180	LVLH R=180.00 P= 90.00 Y= 0.00	-XLV -ZVV HST Reboost DTO
6 014/19:50:00 MET 20:00:04 187/10:39:00 GMT 49:04	TGT=4 BV=5 P=270.00 Y= 0.00 OM= 60.00 RA= 104.157 DEC= 22.807N	A1 AUTO VERN RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 180 P 90	INRTL R=287.71 P= 17.09 Y= 20.23	Return to +ZSI
7 014/23:22:00 MET 32:06 187/14:11:00 GMT 21:06	INRTL R= 94.00 MNVR P=146.00 Y=278.00	A1 AUTO VERN RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 278 P 153		+X RCS TRIM BRN TIG: 14/23:37 LVLH 0/190/0
8 014/23:42:00 MET 52:06 187/14:31:00 GMT 41:06	TGT=4 BV=5 P=270.00 Y= 0.00 OM= 60.00 RA= 104.323 DEC= 22.792N	A1 AUTO VERN RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 180 P 90	INRTL R=287.67 P= 17.05 Y= 20.37	Return to +ZSI
9 015/02:30:00 MET 45:00 187/17:19:00 GMT 34:00	TGT=4 BV=3 P= 90.00 Y= 0.00 OM= 0.00 RA= 104.443 DEC= 22.781N	A1 AUTO VERN RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 360 P 90	INRTL R= 63.52 P=141.20 Y= 4.06	-ZSI Top Sun for BET due to tire att
10 015/05:30:00 MET 36:35 187/20:19:00 GMT 25:35	TGT=2 BV=3 P= 90.00 Y= 0.00 OM= 0.00	A1 AUTO VERN RATE 0.2000 DB AT 1.000 DB RT 0.020	EARTH R 0 P 90	LVLH R= 0.00 P=180.00 Y= 0.00	-ZLV -XVV General thermal conditioning
11 015/17:00:00 MET 10:19 188/07:49:00 GMT 59:19	TGT=4 BV=5 P=184.00 Y= 0.00 OM=270.00 RA= 105.064 DEC= 22.723N	A1 AUTO VERN RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 180 P 176	INRTL R= 99.14 P= 59.57 Y=293.08	-XSI
12 015/18:22:00 MET 27:03 188/09:11:00 GMT 16:03	INRTL R=334.00 MNVR P=303.00 Y=315.00	A1 AUTO VERN RATE 0.2000 DB AT 1.000 DB RT 0.020	SUN R 144 P 120	STARS -Y: 48 -Z: 28	D/O IMU ALIGN

*** ALL ATTITUDES IN MEAN OF 1950 ***
*** PYR EULER SEQUENCE ***

Attitude Timeline

MET/GMT	MNVR OPTION	DAP	E/S	REF ATT/REMARKS	EVENT
13 015/18:33:00 MET 36:16 188/09:22:00 GMT 25:16	INRTL R= 15.00 MNVR P=283.00 Y= 44.00	B1 AUTO PRI RATE 0.5000 DB AT 3.00 DB RT 0.20	SUN R 113 P 32	STARS -Y: 27 -Z: 54	D/O IMU VERIF
14 015/18:56:00 MET 19:01:20 188/09:45:00 GMT 50:20	INRTL R=341.00 MNVR P= 79.00 Y=324.00	B1 AUTO PRI RATE 0.5000 DB AT 3.00 DB RT 0.20	SUN R 90 P 150		D/O THERMAL & COMM ATT
15 015/21:05:00 MET 10:45 188/11:54:00 GMT 59:45	INRTL R=126.00 MNVR P=106.00 Y= 82.00	TRN AUTO PRI RATE 0.5000 DB AT 3.50 DB RT 0.20	SUN R 285 P 35		D/O BURN to KSC TIG: 15/21:20 LVLH 0/192/0
16 015/21:25:00 MET 28:35 188/12:14:00 GMT 17:35	INRTL R=265.00 MNVR P=321.00 Y=349.00	TRN AUTO PRI RATE 0.5000 DB AT 3.50 DB RT 0.20	SUN R 212 P 97		EI-25 INRT equiv of LVLH 0/40/0 at EI-5
17 015/21:45:00 MET 01 188/12:34:00 GMT 01	TGT=2 BV=5 P=230.00 Y= 0.00 OM= 0.00	TRN AUTO PRI RATE 0.5000 DB AT 3.50 DB RT 0.20	EARTH R 180 P 130	LVLH R= 0.00 P= 40.00 Y= 0.00	EI-5 LVLH

*** ALL ATTITUDES IN MEAN OF 1950 ***
*** PYR EULER SEQUENCE ***

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STS-78
FLIGHT PLAN NOTES

FLIGHT PLAN NOTES
(CONSTRAINTS AND GUIDELINES)

A. FLIGHT DESCRIPTION

Orbiter: OV102/Columbia
Inclination: 39°
Insertion Altitude: nm
Duration: 16 days

B. MAJOR EVENTS

<u>EVENT</u>	<u>MET</u>	<u>DATE</u>	<u>CDT</u>	<u>GMT</u>	<u>ΔV</u>	<u>HA/HP</u>
Launch	00/00:00	06/20/96	09:49	172/14:49	--	--
OMS-2	00/00:43	06/20/96	10:32	172/15:32	185.0	146/153
Trim Burn #1	00:04:30	06/20/96	14:19	172/19:19	0.0	146/153
Trim Burn #2	14:23:37	07/05/96	09:26	187/14:26	21.5	138/138
D/O Burn	15:21:20	07/06/96	07:09	188/12:09	242.0	--
Landing	15:22:20	07/06/96	08:09	188/13:09	--	--

C. LANDING OPPORTUNITIES

		<u>Landing Orbit</u>	<u>Site</u>	<u>Local Time</u>	<u>MET</u>
		<u>No.</u>			
Nominal	Primary	256	KSC	09:09	15/22:20
	1 Rev Late	257	KSC	10:43	15/23:54
	Weather Alt	257	EDW	07:35	15/23:46
1 Day Late	Primary	272	KSC	08:52	16/22:03
	1 Rev Late	273	KSC	10:25	16/23:36
	Weather Alt	273	EDW	07:17	16/23:28
2 Days Late	Primary	288	KSC	08:30	17/21:41
	1 Rev Late	289	KSC	10:03	17/23:14
	Weather Alt	289	EDW	06:55	17/23:06

D. CREW

CDR - Tom Henricks
PLT - Kevin Kregel
MS1 - Rick Linnehan
MS2 - Susan Helms
MS3 - Charles Brady
PS1 - Jean-Jacques Favier
PS2 - Robert Thirsk

The Payload Commander is MS2. The crewmembers responsible for performing an EVA, should one become necessary, are MS1 and MS2.

E. COMMUNICATIONS

SHUTTLE

TDRS Support: East (41° W), West (174° W)

Ground Sites: MIL and BDA

Contingency RTS: DGS, GTS, HTS, IOS, MIL, BDA, OTS, and VTS

FLIGHT PLAN NOTES

F. IMU ALIGNS

Routine IMU aligns are expected to occur every 24 hours with stars of opportunity; therefore, aligns are not scheduled in the Flight Plan. If required, specific IMU star pair attitudes are available.

G. OFF DUTY

Off duty periods for the crew are scheduled for FDs 6 and 11. All crewmembers will have off-duty at the same time.

H. PAYLOADS

1. Life & Microgravity Sciences (LMS)

LMS consists of a compliment of multi-national microgravity experiments in life and material science. It includes a long Spacelab Transfer Tunnel (STT). Some experiments will be located in orbiter middeck lockers. LMS supports 15 human life sciences experiments, 3 non-human life sciences experiments, and 6 microgravity experiments.

The following is a list of the LMS experiments:

AEM	-	Animal Enclosure Module (middeck)
AGHF	-	Advanced Gradient Heating Facility
ALFE	-	Cardio-Pulmonary Function, Astronaut Lung Function Experiment
APCF	-	Advanced Protein Crystallization Facility
BDPU	-	Bubble Drop and Particle Unit
COIS	-	Neuro-Science, Canal & Otolith Studies
COW	-	Musco-Skeletal, Calcium Osteogenic Weightlessness
ECCO	-	Musco-Skeletal, Eccentric/Concentric Exercise
MCIM	-	Musco-Skeletal, Motor Control in Microgravity
MMA	-	Microgravity Measurement Assembly
MRI	-	Musco-Skeletal, Magnetic Resonance Imaging
OARE	-	Orbital Acceleration Research Experiment
PAWS	-	Human Behavior, Performance Assessment Workstation
PEMS	-	Musco-Skeletal, Percutaneous Electrical Muscle Stimulation
PGF	-	Plant Growth Facility (middeck)
SACS	-	Human Behavior, Sleep and Circadian Studies
SAMS	-	Space Acceleration Measurement System
SPIT	-	Regulatory Physiology/Musco-Skeletal, Saliva Processing Integrated Temporally
STAB	-	Musco-Skeletal, Skeletal muscle Trochar and Biopsy
STL-B	-	Space Tissue Loss (config B)
TRE	-	Neuro-Science, Torso Rotational Experiment

2. Biological Research in Canisters (BRIC) Modified Block IV

Three canisters, each with nine samples of daylily cell cultures, will be flown to test critical stages in embryogenesis. Previous flight findings will be validated. There is no crew interaction for this experiment.

3. Shuttle Amateur Radio Experiment - II (SAREX-II) Config C

SAREX-II is a flight deck payload capable of two-way communication with amateur radio stations in the Line of Sight (LOS) of the orbiter. Antenna is mounted in either Window 1 or 6. Configuration C is capable of operating in a Robot mode and voice mode. Intermittent voice operations will be performed as time permits.

I. ON-ORBIT DTOs

1. WSB Quick Restart Capability (DTO 416)

The purpose of this DTO will define the capability of WSBs to support APU quick restarts, thereby verifying support capability of Rev 2 deorbit and AOA aborts. APU/WSB quick restarts available for an AOA would reduce required APU/WSB consumables reserved for continuous APU operations in an AOA, thereby increasing performance margins.

2. Cabin Air Monitoring (DTO 623)

This DTO will use the solid sorbent sampler to continuously sample the orbiter atmosphere throughout the flight.

3. Portable In-Flight Landing Operations Trainer (PILOT) (DTO 667)

This DTO consists of a laptop PC with landing software and a spare RHC (essentially a landing simulator). The DTO will attempt to verify that the simulator will assist the CDR and PLT in maintaining a high level of proficiency for approach and landing on EDO missions.

4. Voice Control of Closed Circuit Television System (DTO 675)

The purpose of this DTO is to control the orbiter CCTV system using voice commands in order to investigate impacts of microgravity on speech and to allow crewmembers to operate the RMS and command the CCTV system simultaneously.

5. VRCS Reboost Demonstration (DTO 837)

The purpose of this DTO is to demonstrate the capability to reboost for Hubble Space Telescope (HST) on STS-82 using VRCS. The effects of plume impingement on the elevons will be investigated. Also, VRCS reboost capabilities will be demonstrated by manually pitching the orbiter back and forth using the VRCS downfiring jets.

6. KCA Video Teleconferencing Demonstration (DTO 1126)

This DTO will demonstrate how existing OCA/KCA systems can be integrated with a commercial teleconferencing system to expand shuttle communication capability.

J. ON-ORBIT DSOs

1. Immunological Assessment of Crewmembers (DSO 487)

As shuttle mission durations increase, the potential development of infectious illness in crewmembers during flight also increases. This study will improve the understanding of the potential impacts of spaceflight induced immunological alterations on crewmember health and performance. There are no on-orbit crew activities associated with this DSO.

2. Characterization of Microbial Transfer Among Crewmembers During Spaceflight (DSO 491)

To minimize the spread of infectious agents during spaceflight, a better understanding of microbial dissemination within the shuttle environment is necessary. The dissemination of normal crew microbiota will be studied by tracking a specific target organism through samples obtained preflight and post flight from participating crewmembers. No inflight crew activities are required.

3. Monitoring Latent Virus Reactivation and Shedding in Astronauts (DSO 493)

This DSO will study spaceflight-induced immunocompetence focusing on the potential for reactivation and dissemination (shedding) of latent viruses. Saliva samples will be collected daily from participating crewmembers.

4. Educational Activities (DSO 802)

The purpose of this DSO is to produce educational videos using the attraction of spaceflight to capture the interest of students and motivate them toward careers in science, engineering, and mathematics.

5. Documentary Television (DSO 901)

The purpose of DSO 901 is to provide live television or VTR dumps of crew activities, orbiter operations, payload deployment/retrieval operations, Earth views, and rendezvous/proximity operations.

6. Documentary Still Photography (DSO 903)

The purpose of DSO 903 is to provide still photography of crew activities, orbiter operations, payload deployment/retrieval and operations, Earth views, and unscheduled items of interest.

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FLIGHT DATA FILE
Distribution
78 FLT PLN FSP FIN

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EC5/ANDERSON, S. (2)
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EE2/RCA SUPPORT
EG/CRITELLI, S. (2)
EG/LIBRARY
EG1/KANIPE, D.B.
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ES32/SERNA, R.
ES62/DAVIS, R.
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R16C/PROX OPS LIBRARY

R16C/RNDZ LIBRARY
R16C/TRAJECTORY LIBRARY
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